Like Blood from a Stone: Teasing out Social Difference from Lithic Production Debris at Kolomoki (9ER1)

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Like Blood from a Stone: Teasing out Social Difference from Lithic Production Debris at Kolomoki (9ER1)

by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Applied Anthropology
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Abstract

Early phases of Kolomoki’s occupation have been characterized as relatively egalitarian, with little evidence for status differentiation. However, patterned variability in lithic raw material use and intensity of production in domestic areas suggests heterogeneity in the community at multiple scales. In light of Kolomoki’s emphasis on communal ceremony, internal divisions between groups of households highlight the tension between public and private expressions of status and social solidarity. New radiocarbon dates from the southern margins of the village have allowed us to assess the contemporaneity of this pattern, and by extension, the chronology of village aggregation.
Chapter 1 - Introduction

Large communities throughout history have incorporated diverse social groups and contained numerous internal social divisions (Birch 2012; Boudreaux 2013; Dueppe 2012; Eckert 2008; Gilman and Stone 2013; Hakenbeck 2007; Hayden 1996; Janusek 2002; Rautman 2014; Schachner 2010; Smith 2015; Tuzin 2001; Wilson 2008; Wilson et al. 2006). With an extent of around one square kilometer, at least nine mounds containing tens of thousands of cubic meters of earth, and a proposed population of several hundred people (Pluckhahn 2003), the village and mound complex of Kolomoki certainly qualifies as one of the largest communities of the Woodland period (ca. 1000 B.C. to A.D. 1050) in North America (Figure 1-1). In fact, at the height of its occupation, Kolomoki may have been the “largest and most densely settled community north of Mexico” (Pluckhahn 2003:198). However, according to previous interpretations of Kolomoki, its grand scale belies scant evidence for social stratification and differentiation within its village, which contains redundant artifact assemblages and few prestige goods (Pluckhahn 2003).

In recent decades, archaeologists have begun to interrogate the assumed relationship between monumentality, the emergence of village societies, and social hierarchy (Spielmann 2008; Saunders 2004), necessitating a more nuanced approach for understanding the social organization of ceremonial centers and associated early aggregate villages. The lack of prestige or elite goods from domestic contexts assigned to the principal phases of Kolomoki’s occupation necessitates that I shift my investigation of social difference at Kolomoki from a perspective that
emphasizes hierarchical distinctions to one that instead privileges social difference as represented by patterning in the residues of everyday practice. Naturally, Kolomoki’s domestic areas constitute the most appropriate focus for this study of the everyday. I employ the household as the theoretical unit of analysis as households constitute the primary context for economic production and social reproduction (Cobb and Nassaney 2002; Flannery 1994; Hirth 2009; Pluckhahn 2010a; Wesson 2008; Wilk and Rathje 1982). Based on the entwined nature of social and economic activities within households, economic differentiation and spatial proximity form a combined indicator for social differentiation under the assumption that social ties are stronger between nearby households engaging in similar economic activities. Therefore, I expect social differences within Kolomoki’s village to be represented not only by distinctions in the economic activities of households, but by spatial clustering of those activities as well.

I focus on the spatial distribution of domestic lithic production as a means of interpreting the social dynamics of Kolomoki’s village. Most areas of Kolomoki’s village contain the same flakes, cores, and tools manufactured from chert and quartz, excepting the restricted distribution of small quantities of milky quartz in the south of the village (Pluckhahn 2003:104). However, my investigation of patterning in lithic debitage assemblages - residues of the concentration and intensity of lithic production (sensu Costin 1991) - reveals economic and perhaps social differentiation at multiple scales, in contrast with earlier interpretations of Kolomoki (Sears 1956; Pluckhahn 2003). Furthermore, new radiocarbon dates and ceramics from recent excavations in the village not only suggest that these patterns in lithic production are roughly contemporaneous, but that the aggregation of Kolomoki’s village occurred later than previously thought (Sears 1956; Pluckhahn 2003, 2011).
Site Description and Previous Investigations

Kolomoki is located in Early County, Georgia near the town of Blakely, about 12 kilometers east of the Chattahoochee River. The site contains at least nine mounds, including conical burial mounds and a massive platform mound with a height of around 17 meters (Pluckhahn 2003; Sears 1956). The site’s core, including most of the mounds, is encircled by a low curved ridge or embankment called the enclosure which likely served to delineate the extent of the village (Pluckhahn 2003, see Figure 1-1). Previous archaeological investigations at Kolomoki consisted of early work by Edward Palmer and others in the late 1800s followed by excavations conducted under Charles Fairbanks and Robert Wauchope in the 1930s and 1940s.

Figure 1-1: Kolomoki and its location within the Southeastern U.S.
(Fairbanks 1946; Pluckhahn 2003). William Sears excavated at the site in the late 1940s and early 1950s, recovering caches of elaborate mortuary ceramics from the burial mounds E and D (Sears 1956). Unfortunately, the presence of the large platform mound, Mound A, influenced Sears to conclude that the complex was the product of a Mississippian Period occupation despite the ubiquity of earlier Woodland Period ceramics throughout the site. Sears later revised his ceramic chronology for Kolomoki, acknowledging the site’s Woodland Period occupation (Sears 1992).

More recent excavations by Thomas Pluckhahn in the late 1990s through the 2000s have soundly refuted some of Sears’s earlier conclusions and refined our understanding of the chronology and the nature of activity areas and domestic life at Kolomoki (Pluckhahn 2003, 2011). Unlike previous research, Pluckhahn’s investigations focused on off-mound areas at the site, with special attention paid to determining the spatial extent and intensity of occupation in Kolomoki’s village.

**Environmental Setting**

Kolomoki is situated along a broad, flat upland area within the Coastal Plain physiographic province that spans from the Fall Line some 70 kilometers to the north of the site to the Gulf Coast. The site falls within the Fall Line Hills zone of the Coastal Plain as defined by Veatch and Stephenson (1911), an area characterized by rolling hills that grade from the Piedmont province southward to the flat Dougherty Plain.

The surface soils at Kolomoki consist of red sandy loams and loamy sands underlain by red clay (Pilkington 1985; Pluckhahn 2003, 2011). From the areas of highest elevation along the southern margins of the site, the landform on which the site sits slopes gradually downward to
Figure 1-2: Aerial view of Mounds A and D at Kolomoki. Courtesy of Thomas J. Pluckhahn
the east and west. The site’s most recognizable features, Mounds A and D, are situated along a plain defined to the west by a sloping drainage between Mounds D and E and to the east by a drainage and gulley which bracket Mound A to the north and south, respectively. The steep slopes of these drainages contain springheads at their bases. Also located below the raised terrace that defines the site’s core is a marshy area to the northwest and the floodplain of the immediately adjacent Little Kolomoki Creek. Erosion has continually affected the landform on which Kolomoki sits, and beginning in the 19th century, Kolomoki also experienced extensive agricultural disturbance. As a result, discrete stratigraphy is largely nonexistent from the upper portions of Kolomoki’s soils.

While Kolomoki is located next to a number of water sources in the form of springs and the small stream, Pluckhahn (2003:31) observes that its placement so far from a significant navigable waterway - nearly 12 kilometers from the Chattahoochee River - is nearly unique among major mound centers of eastern North America. The Chattahoochee River begins in the Appalachian mountains of northern Georgia and flows southwest and south until it meets the Flint River about 70 km south of Kolomoki to form the Appalachicola River, which flows south into the Gulf of Mexico.

_Cultural and Historical Setting_

Kolomoki arose within the Chattahoochee Valley shortly after the decline of the nearby Mandeville (9CY1) site, a Middle Woodland mound complex producing artifacts evincing Hopewellian connections. The waning and eventual abandonment of Mandeville around A.D. 300 coincided with a centrifugal shift in settlement along the lower Chattahoochee with populations clustering to the north along the Fall Line physiographic boundary and to the south
near the confluence of the Chattahoochee and Flint rivers (Pluckhahn 2003:184). During this shift in settlement, populations along the central portion of the valley likely consolidated and founded Kolomoki. Researchers investigating Middle Woodland period sites in the Southeast have speculated that they were linked to the power and influence of small groups or individuals (Knight 1990:162-163). Communal ceremony and incipient status differentiation that would later characterize Kolomoki’s development had historical precedent at Mandeville and other such sites (Pluckhahn 2003:187).

Kolomoki’s main occupation is dated to the Middle-to-Late Woodland period with its founding sometime around A.D. 350 and its abandonment occurring about A.D. 850 (Pluckhahn 2003:4, 2011:180). Mound construction was most intense during the first two centuries of the site’s occupation (A.D. 350-550), thought to indicate the importance of communal ceremony at that time (Pluckhahn 2003:183-207). It is also during these early centuries that the enclosure is thought to have been in use; excavations producing evidence for domestic habitation thought to date to this time are centered along this feature and the eastern portion of the site near Mound A (Pluckhahn 2003).

The first century of Kolomoki’s occupation, Pluckhahn’s (2003) Kolomoki I phase dating from A.D. 350-450, was characterized by the construction of early phases of Mounds D and E, and perhaps the enclosure and Mounds G and K. Mounds E and K established an east-west axis around which the generally circular village plan, coinciding with the enclosure, was constructed. The great distances between these earliest constructions, demarcating the site’s extent of nearly one square kilometer, are seen as evidence of a grand vision for the site by its founders (Pluckhahn 2003:185). The enclosure itself also serves as a temporal marker of sorts based on its resemblance to similar features at other Early and Middle Woodland Period sites and the
presence of early ceramic types along its extent (Pluckhahn 2003:185; Spielmann 2008; Squier and Davis 1848; Wright 2014). Additionally, the circular plan of the enclosure, and perhaps by extension the village, indicates a relatively egalitarian political ethos was present during the period of its use (Pluckhahn 2003), though more radiocarbon dates are needed to demonstrate the contemporaneity of sections of the village.

The second century of Kolomoki’s occupation, spanning from around A.D. 450-550, witnessed the greatest intensity of monumental construction. It was during this phase, dubbed Kolomoki II by Pluckhahn (2003), that Mound A was likely built. Pluckhahn estimates that Mound A would have required the investment of 200 days of work by 200 people, probably split between multiple construction episodes (2003:200). The massive scale of mound construction, which would seem to implicate some form of coercion or central authority, belies the seemingly egalitarian organization of the village during this period as represented by unexceptional domestic assemblages, similar to the Kolomoki I phase (Pluckhahn 2003).

Mound construction and the maintenance of the circular village plan along the enclosure is thought to have deteriorated during the final three centuries of Kolomoki’s occupation. Coincident with this decline in communal ceremonialism at Kolomoki is a shift in settlement along the Lower Chattahoochee towards the south. The Kolomoki III and IV phases as defined by Pluckhahn (2003) witnessed a decline in the proportions of Swift Creek ceramics and an increase in various Weeden Island types as well as increased evidence for differentiation in status between households. At the time of Kolomoki’s abandonment around A.D. 850, settlement within the lower Chattahoochee region was concentrated to the south, while the north seems to have become largely depopulated (Pluckhahn 2003:219; White 1981). In the following centuries of the Early Mississippian Period, however, indigenous settlement of the lower Chattahoochee
seems to have resumed a north-south pattern similar to that seen during Kolomoki’s Phase I and II occupation (Blitz and Lorenz 2002, 2006).

Interestingly, Kolomoki’s placement between the northern and southern population clusters noted above means that the site was relatively isolated with few contemporaneous settlements nearby. Previous researchers have proposed that Kolomoki’s peculiar placement may be due to the desire of its inhabitants to exploit productive agricultural lands in the area (Steinen 1998). Others have proposed that Kolomoki was located along a major trade corridor (Anderson 1998). Pluckhahn (2003) counters that the site’s distance from the Chattahoochee River and the lack of sites within its immediate vicinity make these conclusions unlikely and instead proposes that the reasons for Kolomoki’s placement were social. Pluckhahn (2003:46) hypothesizes that Kolomoki might have served as a nexus of interaction and mediation between groups inhabiting the northern and southern settlement clusters. If Kolomoki articulated a boundary between these two population clusters as Pluckhahn proposes, its inhabitants would have likely included individuals with ties to both populations; effective mediation would have precluded Kolomoki from existing as a bounded society removed from the influence of or interaction with its neighbors. Furthermore, while segmentary societies can be considered those in which new identities are forged from disparate participating groups, research suggests that other identities can be subsumed, and therefore preserved, within a larger community identity (Birch 2012; Eckert 2008; Hakenbeck 2007; Rautman 2014; Tuzin 2001).

Regional Distribution of Lithic Resources

Whereas a great deal of attention has been paid to the site’s ceramics, consisting mostly of Swift Creek and Weeden Island types, little work has been done concerning the site’s lithic
assemblage beyond seriation of the site’s projectile points, a notable exception being Pluckhahn and Norman’s (2011) study of projectile point form. While Kolomoki’s lithics largely consist of Coastal Plain chert and shattered quartz cobbles (Pluckhahn 2003:99-104), this study is also concerned with the distribution of opaque milky quartz. Both clear crystal quartz and milky quartz probably came to Kolomoki in the form of small stream-rolled cobbles transported from the Georgia Piedmont by the nearby Chattahoochee River (Pluckhahn 2003:104). Additionally, very small amounts of other lithic types have been recovered at Kolomoki, consisting of Knox chert from the Ridge and Valley province of northwestern Georgia and silicified sandstones or orthoquartzites possibly from Central Georgia (Daltonite) or the Tallahatta formation to the west (Dunning 1964; Waggoner and Jones 2007).

Coastal Plain chert is locally available at Kolomoki with low-quality sources occurring near the site itself and higher-quality sources within a day’s walk (Pluckhahn 2003:99). In fact, Kolomoki is placed at the northern margin of a wide chert-producing geologic formation, seen as “Residuum/Ocala Chert” in Figure 1-3. This distribution of Coastal Plain chert overlaps with the eastern margins of the Tallahatta formation (Svarda et al. 2010). Excavations north of Kolomoki at the roughly contemporaneous Silver Run site in Russel County, Alabama revealed a proliferation of debitage from extralocal lithic sources, including Hollis quartzite and Auburn gneiss, types not seen in any significant proportion at Kolomoki (Price et al. 2008). In general, the portion of the Chattahoochee Valley immediately north of Kolomoki to the Fall Line seems to be relatively poor in lithic resources, necessitating that the residents of Silver Run procured diverse lithic materials from adjacent regions, a pattern not observed at Kolomoki.

Metamorphic rocks used for the production of groundstone items recovered at Kolomoki probably originated to the north in the Piedmont. The presence of a few groundstone plummets
and one fragmented groundstone bar gorget in addition to a number of flat slabs of metamorphic rock within the assemblages from Kolomoki indicate that these resources likely reached the site through trade.

Tallahatta sandstone and geologically associated Tallahatta chert are known to have been used widely throughout southern Alabama and farther south by people of the Santa Rosa Swift Creek area in Northwest Florida (Bense 1998; Dunning 1964; Lloyd et al. 1983; Walthall 1980). The Tallahatta formation runs in a broad arc from North Central Mississippi through southern Alabama, becoming increasingly diffuse and eventually ending in southeastern Alabama and

Figure 1-3: Distribution of lithic resources in Alabama, Georgia, and Florida, with Kolomoki (9ER1) and Silver Run (1RU142) indicated (Modified from Price et al. 2008). Courtesy of Sarah E. Price
southwestern Georgia near Kolomoki (Price et al. 2008; Savrda et al. 2010). It is presumed to be locally available at and around Kolomoki itself (Pluckhahn 2003:104); however, orthoquartzites such as Tallahatta sandstone or Daltonite make up only a small portion of the overall lithic assemblage from Kolomoki.

*The Curse of Quartz*

Quartz in archaeological contexts frequently defies characterization as a generalized tool stone; its function is seldom crystal clear (Carr and Chase 2005; Jones et al. 1998; Keith 2010; Pluckhahn 2003; Warren and Neighbour 2004). Kolomoki’s quartz assemblage, which makes up about a quarter of all lithic material, contains almost no formal tools, raising questions about the function of the thousands of quartz flakes that litter the site in both residential and near-mound contexts. This pattern holds for contemporaneous sites elsewhere in the region, especially those associated with Swift Creek ceramics (Jones et al. 1998; Keith 2010; Snow 1977; Williams and Harris 1998; Williams and Shapiro 1990). A number of hypotheses have been forwarded to explain what quartz was used for at Kolomoki and other Swift Creek sites, from their use as the preferred material for wood engraving (Pluckhahn 2003), scarification (Benson et al. 2001), tattooing (Keith 2010), cutting mica (Jones and Tesar 1996, Jones et al. 1998) to their use to produce sparks or light fires during ceremonies (Jones and Tesar 1996; Jones et al. 1998; Keith 2010).

Previous researchers have tackled some of the archaeological issues that often arise when lithic assemblages are heavy in quartz, notably in terms of technology through investigations of reduction strategies (Potts 2012) and use-wear (Sussman 1985; Knutsson 1988). Lithic analysts have long recognized that variable quality in available toolstones influences peoples’
Figure 1-4: Quartz debitage from Kolomoki
technological strategies (Andrefsky 2005; Andrews et al. 2004). Specifically, quartz and low quality quartzite, due to their natural forms and fracture characteristics, are often reduced using bipolar techniques, which leave appreciably different debitage assemblages than bifacial reduction. Despite these insights, technological characterization of a particular quartz assemblage rarely serves in itself to elucidate the stone’s particular function at a given site. Materials such as quartz, often ascribed spiritual potency by virtue of their unique material properties, demand the consideration of social and spiritual contexts with regard to interpretation.

Archaeologists and ethnographers have considered the ways in which materials with unusual properties such as quartz become integrated into the social and ideological spheres through studies of context both within an individual site and also throughout a landscape. Specifically, quartz’s properties of reflectivity, refractivity, and transparency have been noted as salient features influencing this material’s place in both social and spiritual life in ethnohistoric accounts in southeastern North America (Capron 1953; Hudson 1976; Mooney 1900; Sturtevant 1954; Swanton 1927, 1946), where its functions ranged from divination to war and hunting medicine. A number of parallels regarding beliefs about quartz can be found throughout the works of Mooney (1900), Swanton (1927), and Sturtevant (1987) that supplement the brief review provided by Hudson (1976:167-169). Notably, the 5 “Civilized Tribes” all hold some belief in the power and animacy of crystals (Swanton 1927:498), which some researchers have suggested likely derives not only from their more obvious material qualities of transparency and reflectivity, but also from the piezoelectric qualities of triboluminescence, whereby they emit light when struck or rubbed together (Loubser 2005; Vanpool and Newsome 2012; Whitley 1991). Specifically, the Cherokee and Creeks held that crystals of various levels of power (according to their color) were useful for hunting and courting the opposite sex (Hudson
1976:168). Due to these powers, crystals were considered dangerous to those unaccustomed or inadequately prepared for their use. As such, they were thought to have adverse effects on men, women, and children in their vicinity (Swanton 1927:500).

The most powerful crystals were called *Ulunsuti* by the Cherokee and were derived from the transparent crest on the head of a horned serpentine monster known as the *Uktena* (Mooney 1900:297-298), while less powerful crystals may have come from its scales (Mooney 1900:300-301). Similarly, the *sapiya* crystals (or *sabia*) of the Creeks were roughly analogous as hunting medicine to horn fragments of the “horned serpent” (Swanton 1927:494), an obvious parallel to the Cherokee *Uktena*. Both the *Uktena* and the horned serpent were said to have the power to attract and enchant other beings. The crest of the *Uktena* blazed from its head to blind or confuse humans unlucky enough to look upon it (Mooney 1900:297-298) while the horned serpent is said to have attracted game to itself (Swanton 1927:494). The connection here is that the power of crystals and “serpent horns” (apparently distinct from fangs) are derived from the power of the creatures that once bore them. A further similarity within the Creek tradition between crystals and serpent horns are their color varieties, consisting of yellow, red, blue, and white (Swanton 1927:494, 498). The exception among these colors is black, which only occur as *sapiya*, and are noted to be the only *sapiya* lacking a crystalline luster (Swanton 1927:498). The similarity in Creek and Cherokee understandings of crystals and the traditions regarding their origins is worthy of note, considering these groups descend from different linguistic stocks and came into intensive contact relatively late in history.

Among the Seminole, quartz crystal is the “Lightning Missile” of the medicine bundle, a powerful piece of war medicine that can variably make combatants invisible or frighten the enemy (Capron 1953:172; Sturtevant 1954:35). Capron’s Seminole informant stated that the
stone contained in the medicine bundle was found at the base of a tree struck by lightning, while Sturtevant mentions one tradition which holds that it came from a “thunder-being” living underwater. Notably, Capron (1953:168) also mentions the inclusion a horn of the “Snake King” held in the Cow Creek medicine bundle, which Sturtevant (1954:38-39) notes was used as a hunting charm like its Creek equivalent.

As mentioned previously, crystal quartz is found in large quantities at sites bearing Swift Creek ceramics dating from the Middle to Late Woodland periods, considerably earlier than the origins of most Southeastern Indian groups as we know them. Researchers studying Swift Creek ceramics have suggested that the intricate designs present on these vessels and the overstamping that frequently occurred during manufacture rendered designs extraordinarily complex and sometimes nearly incomprehensible, similar to other complex designs used as “demon traps” (Gell 1998:83-90; Wallis 2011:201-202). In some societies, it is believed that exceptionally complicated designs captivate malicious spirits who attempt to comprehend them, rendering the spirits harmless (Gell 1998:83-90). As discussed above, crystals and other charms acted as war and hunt medicine due to their associations with mythical serpents and their abilities of enchantment. If it is true that quartz was used as a tool for engraving Swift Creek design paddles as Pluckhahn (2003) suggests, then it may be that the properties of enchantment attributed to quartz may have been intentionally imparted onto those designs by its use.

The deposition of quartz crystals, bifaces, and flakes within graves associated with other shamanistic paraphernalia at Hopewellian sites has led Carr and Chase (2005) to identify quartz with ceremonial and ritual practices during the Middle Woodland period. This point is especially important as it places quartz fairly unambiguously within the socio-symbolic realm of a culture
with which the people of Kolomoki, and seemingly everybody else within Middle Woodland eastern North America, were likely acquainted.

While the attribution of socio-symbolic interpretations to quartz by archaeologists is often informed by the lack of obvious industries involving the material, it is important to recognize that techno-functional and socio-symbolic importance are not mutually exclusive and are instead often associated (Binford 1962; Dobres 2000; Vanpool and Newsome 2012). Johnson (1993) describes an assemblage of quartz crystal artifacts from the Late Archaic period Slate site that he interprets, based on use-wear, as drills for a slate bead industry associated with Poverty Point. Similarly, Cane (1992) provides an ethnographic account of Australian Aboriginal men identifying specific stone tool types with symbolically-loaded tasks, namely the engraving of cosmological designs on wooden artifacts, which impart the tools themselves with potent meaning. In both of these cases, the singular use of the materials or tool forms in question informs our interpretation of their symbolic value. The symbolic meaning of tools can be, and often is, simultaneously a function of both the tools' own material properties and the properties of the subject materials they modify.
Chapter 2 - Theoretical Perspective

My analysis of lithic raw material variability and its implications for the expression of divergent social identities at Kolomoki employs practice theory (Bourdieu 1977; Ortner 1984) and the related concept of tradition as defined by Pauketat (2001a). Practice theory is commonly associated with Bourdieu’s (1977) concept of habitus, which describes the structurally and historically-dependent dispositions that constrain human action, and doxa, the perceived “self-evident” nature of the social and natural world (164). Similarly, Pauketat’s (2001a) discussion of tradition emphasizes an explicit focus on the interplay between practice and history: not only the ways in which history structures practice, but how people manipulate and reinterpret history through practice. In this sense, agency is given a privileged role in the process of making history (Pauketat 2001a, 2001b). Within the context of lithic production, the concept of practice encompasses all activities along the *chaîne opératoire* (Leroi-Gourhan 1964) from raw material selection through tool use and discard. These activities constitute learned techniques acquired through daily interaction with individuals in a particular community of practice, or the social field within which everyday life takes place. Thus, practice theory offers an important perspective on the perpetuation of certain patterns along the *chaîne opératoire* through time.

Households as Communities of Practice

Communities of practice (Lave and Wenger 1991; Minar and Crown 2001; Stark 2008; Wendrich 2012; see Eckert 2008; Sassaman and Rudolphi 2001 for examples of archaeological
are the contexts in which habitual dispositions and techniques are learned and elaborated upon. Paralleling Bourdieu’s (1977:33-38) definition of “practical kin,” communities of practice facilitate learning of cultural knowledge and techniques through everyday interaction (Eckert 2008:10) and peripheral learning through processes of observation and imitation (Lave and Wenger 1991; Wendrich 2012:5). The household, as the basic social and subsistence unit in many communities (Pluckhahn 2010a:332; Wilk and Rathje 1982:618), is perhaps the most widely recognizable community of practice. Furthermore, most production including crafting in nonmarket economies is performed in the household (Cobb and Nassaney 2002; Hirth 2009; Pluckhahn 2010a; Spielmann 2002; Wesson 2008; Wilk and Rathje 1982), making households the primary arenas for the transmission of technical knowledge materialized as artifacts in the archaeological record. Patterning in the distribution of house remains and other domestic debris provides evidence for the assessment of households as communities of practice, potentially revealing patterns of social difference, political organization, and their change through time (Lightfoot et al. 1998; Pluckhahn 2010a; Wesson 2008).

In a comparative study of apprenticeship in pottery production among the Dowayo of Cameroon and San Ildefonso Pueblo in New Mexico, Wallaert (2012) describes learning of pottery styles as both reflective and constitutive of social identities. Within the context of marriage, for instance, female Puebloan potters apprenticed in a particular style must conform to new stylistic impositions from the mother-in-law of her new household, though with some deviation reflecting original ceramic traditions. In this situation, a new microstyle emerges that blends aspects of two traditions (Wallaert 2012). Additionally, certain ceramic types may be associated with ritual practice, or in the case of San Ildefonso Pueblo, commercial success in marketing to collectors. Individuals apprenticed in these styles who skillfully reproduce them
take on the identity and accompanying prestige of ritual practitioners or renowned potters (Wallaert 2012). Houses are difficult to identify at Kolomoki due to heavy site disturbance and limited scope of excavations in the village. Furthermore, the house itself does not neatly correlate to the household as a social unit, therefore the household must be considered a theoretical construct for the purposes of this research.

**Technological Style and Materiality**

Variation in technological style of artifacts constitutes one line of evidence by which archaeologists can recognize communities of practice and their corresponding boundaries (Hegmon 1992 1998; Stark 1998, 2006). Though there has been considerable debate concerning the causes of such variation (Sackett 1973, 1977, 1982, 1985, 1986, 1990; Wiessner 1983, 1984, 1985, 1989, 1990; Wobst 1977), archaeologists now generally recognize that interpretation must rely on particular contexts rather than generalized conceptions of passive reproduction versus intent (Hegmon 1992). For instance, Bowser’s (2000) ethnoarchaeological research among Amazonian potters found that some actively employed elements of style in ceramics to unambiguously display their political affiliations within a region containing multiple political factions while others employed more ambiguous expressions of style to allow them the benefits of interaction with multiple groups. An alternative interpretation of technological style is provided by Hayden et al. (1996), who views lithic variability among domestic middens at the Keatley Creek site in British Columbia as the result of the family groups exploiting different areas of the surrounding landscape as part of their seasonal migrations. Hayden’s work has, however, been challenged on the grounds that habitations and midden deposits he excavated are not contemporaneous (Prentiss et al. 2003; Prentiss et al. 2005).
Distinct technological styles occur through divergence along the *chaîne opératoire* of artifact production (Leroi-Gourhan 1964), which may reflect the rehearsal of learned techniques as well as culturally salient choices made within a given technological system (Dobres 2000; Gosselain 1992, 2000; Lemmonier 1986; Mauss 1934). This relationship between culture and artifact production means technological styles can be considered the materialization of social identities and communities of practice (Dietler and Herbich 1998; Eckert 2008; Hegmon 1992, 1998; Stark 1998, 2006). Recent perspectives on materiality point out the influence of the material world on human action and the structure of social interactions (Brumfiel 2004; Hodder 2012; Miller 2010; Vanpool and Newsome 2012, Wallis 2011, 2013). Within this framework, ‘stylized’ objects can be considered active participants in strategies of social boundary maintenance and expression of identity, perhaps independent of human intent in contrast to the conscious reproduction of emblematic styles (Wiessner 1983).

For instance, investigations of a Mission Period midden at Rancho Petaluma in California by Silliman (2001) uncovered a large lithic assemblage, despite evidence for the relatively extensive use of iron tools. The persistence of lithic technology within this colonial context in which native traditions likely conflicted with the circumstances of mission-centered labor at Rancho Petaluma is interpreted by Silliman (2001) to represent individuals seeking to re-affirm their indigenous identities and resist pervasive Spanish influence through the practice of stone tool production. In another example, examination of Swift Creek ceramic exchange by Wallis (2011, 2013) indicates vessels bearing certain designs representative of a particular social or kin group were exchanged geographically distant groups, perhaps along with marriage partners, and eventually interred alongside individuals in burial mounds. The identification of designs with certain groups or individuals in the context of intergroup exchange is proposed to have served as
markers of alliance and obligation within a social network. This association influenced practices of mortuary deposition as individuals were buried with material reminders of their social contacts in life (Wallis 2011).

Integration, Social Difference, and Communities

Considering difference in material remains of household practice is especially germane to the study of large village sites such as Kolomoki, which were often composed of diverse social groups (Birch 2012; Boudreaux 2013; Dueppen 2012; Eckert 2008; Flannery 2002; Gilman and Stone 2013; Hakenbeck 2007; Hayden et al. 1996; Rautman 2014; Schachner 2010; Smith 2015; Tuzin 2001; Wilson 2008; Wilson et al. 2006). Interpretations of the coalescence of such communities frequently emphasize the importance of ritual (Kidder 2011; Sassaman 2005, 2011) and its role in cultivating social integration (Gilman and Stone 2013; Kowalewski 2006; Pluckhahn 2003; Tuzin 2001). However, a focus on integration may serve to obscure the persistent importance of social differences (Pluckhahn 2007).

The tension between religious or communal identity and the social divisions that segment communities from within are evident in a number of archaeological case studies. Using the symmetry of Swift Creek vessels as a proxy for adherence to an integrative social strategy at Kolomoki, Pluckhahn (2007) notes a disparity in proportions of symmetrical pottery designs between residential and mound contexts. This pattern is interpreted as a representation of differences in the public and private expression of social solidarity (Pluckhahn 2007). Eckert’s (2008) work at Pottery Mound and Hummingbird Pueblo in New Mexico explores the materialization of identity and its relation to regional demographic and ritual contexts. In the context of integrating immigrant and indigenous populations in the Late Prehistoric Southwest,
she argues that stylistic differences may have emphasized social distance, even while a ceramic glazing technology and accompanying suite of iconography was adopted to express religious solidarity (Eckert 2008). Similarly, an investigation of the Tiwanaku polity’s formation by Janusek (2002) revealed the presence of a number of archaeologically visible corporate groups exercising relative autonomy in economic production, though bound by a collective, higher order social identity represented by common religious practice.

The prevalence of communal ritual at many large village sites speaks to its necessity in providing a constant centripetal force to check the centrifugal influence of divergent and conflicting agendas (Kowalewski 2006; Pluckhahn 2003, 2007; Tuzin 2001). Traditions, and the identities they inform constitute relational constructs in a constant state of negotiation (Jones 1997; Weisman 2007), making contexts of social aggregation especially fruitful for the examination of traditional practice and the maintenance of social boundaries (Eckert 2008).

Summary

Here I have outlined a theoretical approach that draws from a number of perspectives including communities of practice, technological style, and community aggregation to frame questions for studying variation in lithic raw material selection and stone tool production at Kolomoki. This approach places stylistic variation as a product of technological tradition, learned within the context of a particular community of practice, which may communicate social difference to reflect group identity and maintain social boundaries. Because the materialization of identity relies on practices of provisioning and consuming, the context and intensity of the archaeological remnants of those practices can be used to evaluate my ideas (Costin 1991). Furthermore, the case studies I have presented illustrate how similar perspectives have been
employed by archaeologists previously, highlighting some of the challenges and opportunities associated with this particular theoretical approach.
Chapter 3 - Methods

This project involved the re-analysis of the lithic assemblage recovered by Pluckhahn (2003) during his shovel testing at the site, supplemented by the excavation of multiple 1-x-1 m and 1 x 2 m Test Units along the southern portion of the enclosure. Using the data from shovel tests, artifact distributions were mapped using ArcMap. A small use-wear study was also performed on a sample of quartz artifacts in an attempt to discern a potential technological function for the quartz artifacts at Kolomoki.

Re-Analysis of Shovel Test Assemblage

During his work at the site, Pluckhahn excavated 1,309 shovel tests along a 20 meter grid across the site to determine artifact densities and distributions. Unfortunately, his categories for lithic types were rather coarse, an issue rectified by a re-analysis of the shovel test materials. The form used to record data on individual lithic artifacts is shown in Figure 2.1.

Analysis of previously excavated lithics consisted of recording a set of values for each flake, including raw material, presence and percentage of dorsal cortex, presence of bulb of percussion and/or platform, number of dorsal flake scars, weight, size, and platform size (see Andrefsky 2005:86-112). Overall size was measured in terms of maximum length (recorded from platform to distal end), maximum width (recorded at the widest point perpendicular to the length axis defined above), medial thickness (measured at the midpoint). Platform size attributes included platform width and platform thickness or depth. Following Andrefsky (2005:87), flake
Kolomoki Lithics Project: Style in Stone

Lithic Debris Observation Form

Observer: _________________________ Date: _________________________

Site Number: _________________________ Provenience: _________________________

FS Number: _________________________ Flake Number: _________________________

Attributes:

Raw Material: _________________________ Color: _________________________

Number of Dorsal Flake Scars: 0: ___ 1: ___ 2: ___ 3+: ___

Platform/Bulb of Percussion Presence: Platform: _____ Bulb: _____

Platform Type: Cortical: ___ Flat: ___ Complex: ___ Crushed: ___ Prepared: ___

Termination: Feathered: ___ Stepped: ___ Hinged: ___ Plunging: ___

Dorsal Cortex Presence: 0% _____ 1-50% _____ 51-99% _____ 100%_____ 

Tool Form: ______________________________

Use Wear Presence: _________________________ Use Wear Type: _________________________

Measurements:

| Max Length (mm) |          |
| Max Width (mm) |          |
| Medial Thickness (mm) |          |
| Weight (g) |          |
| Platform Width (mm) |          |
| Platform Thickness (mm) |          |

Additional Observations:

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Figure 3-1: Observation sheet used for collection of debitage data
termination was separated into four categories: feathered, which are defined as “smooth terminations which gradually shear the flake from the objective piece; stepped, which denotes flakes that have shattered or broken nearly perpendicular to the ventral surface; hinged, defined as a rounded or sloped termination; and plunging, otherwise known as overshot, in which the force of impact slopes into the objective piece, removing a large portion at the distal end.

Platform type was characterized as either cortical, or unmodified and containing some of the parent nodule's external surface; flat, defined as containing a single, smooth surface; complex, which denotes a platform containing multiple facets, evidence of previous reduction of the objective piece; crushed, in which the platform has been shattered by excessive force; and prepared, defined by grinding along the platform (based on Andrefsky 2005:94-98). Dorsal flake scars were identified by simple count and dorsal cortex was divided into categories of relative percent coverage. Quartz does not always have a worn surface analogous to cortex, so I did not expect to be able to readily define flakes according to their stage of reduction based on a “primary, secondary, tertiary” scheme that uses presence and relative coverage of cortex. This was also the case for Coastal Plain chert, which often contains cortex inclusions.

Based on the number of bifaces and finished projectile points/knives produced from previous excavations at Kolomoki, compounded with the exceptionally small number of formal quartz tools, I expected that chert and quartz were subject to different reduction strategies, probably necessitated by the particular qualities of quartz, including small nodule size and lack of predicable flaking pattern (Pluckhahn 2003; Potts 2012). To determine this, I employed a modified lithic typology based on that of Sullivan and Rozen (1985, 1989; Rozen and Sullivan 1989) that separates debitage into four categories (whole flakes, proximal flake ends, flake fragments, and non-oriented debris) and uses the relative proportions of these debitage
categories to distinguish assemblage types based on primary reduction activity. While this typology has received criticism amongst some lithic analysts for concealing variability in lithic assemblages and lacking explanatory utility (Amick and Mauldin 1989; Andrefsky 2005; Prentiss 1998, 2001; though see Austin 1999 for statistical and experimental validation of the typology), I felt its use was especially apt here for the characterization of assemblages consisting of different raw materials presumably utilized for different purposes. This is especially true given the typology’s ability to distinguish bipolar core reduction (Kuijt et al 1995), a strategy proposed for Kolomoki’s quartz (Pluckhahn 2011:128).

The spatial distribution of lithic raw materials in relation to ceramic types and the intensity of lithic production was determined using ESRI ArcMap 10.2. To facilitate comparison of lithic and ceramic densities from shovel tests, Pluckhahn’s existing data Tables containing ceramic counts and weights from shovel tests were merged with a spreadsheet containing the results of my lithic analysis. The base layers for Kolomoki used in this project were produced by Pluckhahn (2003, 2011) during his work at the site. The layers include park features, roads, property lines, mound polygons, elevation contours, and a number of other features including the enclosure, all of which were created with the help of aerial photographs and historic survey maps.

Using the composite lithic and ceramic data, I produced new maps of the distribution of lithic raw material types and certain ceramic types by count and weight using the kernel density tool. The kernel density tool uses data points and an established search radius to interpolate a raster layer, in this case based on the quantities and weights of individual artifact classes within shovel tests. Lithic counts per shovel test are presented in Figures 3-2 and 3-3. The resulting rasters represent continuous maps of the distributions of artifact classes. Higher density values
Figure 3-2: Coastal Plain chert frequencies per shovel test

Figure 3-3: Quartz frequencies per shovel test
indicate greater artifact density in the areas indicated. Additionally, density maps were created for Coastal Plain chert and total quartz (including clear and milky) using a function of weight divided by count. In these maps, high density areas indicate high weight to count ratios, representative of larger pieces of lithic debris, while empty areas of the map are likely the result of extremely low weights and low counts; for instance, a shovel test containing one flake weighing .1 grams returns a value of .1. Moderate density values are indicative of relatively equal ratios of weight to count, indicative of smaller debitage and likely higher counts.

I also tested the correlation of chert and quartz with domestic activity areas using ceramics as a proxy for habitation. The Pearson’s $r$ statistic was used to determine the strength of correlation between total ceramics, Swift Creek ceramics, Coastal Plain chert, and quartz among the shovel tests by count and weight.

*Use-Wear Analysis of Quartz Artifacts*

A sample of 98 quartz and 9 quartzite artifacts from Pluckhahn’s (2003) Unit 3 at Kolomoki were selected for use-wear analysis. I initially sorted these artifacts, employing a targeted sampling strategy that focused on separating what I identified as artifacts with morphological characteristics conducive to their use as distinct tools (burinated flakes and microblades). All artifacts had been previously washed, so I did not subject them to further cleaning. I then examined the potential flake tools using a digital microscope at 50x and 225x magnification in an attempt to identify loci of possible wear and, where present, to characterize wear patterns. Use-wear identification was divided into four non-exclusive categories derived from a survey of use-wear literature, but most heavily influenced by Keeley (1980) and Knutsson (1988), whose study was specific to quartz artifacts: edge-chipping, polish, pitting, and striations.
In addition to the above sample, a small experimental sample was examined: 1 flake and 1 microblade used to cut pork and 1 burinated flake used to engrave a pine board. In each experiment, the tool was used in a uniform repetitive motion for 5 minutes. These experimental tools were then compared with the archaeological assemblage for the purpose of identifying common use-wear features.

After examination with the digital microscope, a small subsample of 9 archaeological flakes and the single experimental tool used to engrave wood were selected for examination using a Hitachi SU70 scanning electron microscope (SEM) at the University of South Florida’s Nanotechnology Research and Education Center. The sample size was limited by the size of the plate onto which samples must be loaded for insertion into the SEM. The range of magnification used for analysis ranged from 70x to 5000x. The artifacts were coated with an ionized gold-palladium layer to aid in imaging. This coating is especially conducive to SEM imaging, but may interfere with energy dispersive spectroscopy (EDS) due to the gold and palladium overlapping with other elemental signatures. EDS was attempted on a single flake with a smeared soil deposit to test the possibility that the deposit might be related to an organic residue, however, the gold-palladium coating rendered the results inconclusive. Again, these artifacts were examined with special attention given to the presence of edge-chipping, polish, pitting, and striation features.

Excavation: Sampling and Analysis

My colleagues and I excavated one 1-x-1 m and six 1-x-2 m Test Units, numbered Test Unit (TU) 20 through TU 25 at various locations along the southern village. The placement of our units was based on shovel test data, the density of surface artifacts, and geophysical prospection carried out by fellow graduate student Shaun West (forthcoming) as well as access
due to certain areas being planted with crops at the time of excavation. Our recovery strategy allowed for the comparison of these lithic and ceramic assemblages with those of the Test Units and shovel tests excavated by Pluckhahn (2003, 2011). Units were generally excavated in 10-cm arbitrary levels, splitting levels along stratigraphic boundaries where observed. Unit matrix was screened using .25-inch (.64-cm) steel mesh.

Processing and analysis consisted of sorting, counting, and weighing materials by level. Additionally, I recorded the presence of formal tools, utilized flakes, and unusual artifacts from our excavations, identifying them macroscopically when possible. Four samples from feature contexts within our Test Units were submitted to the University of Georgia Center for Applied Isotope studies for radiocarbon dating. Artifacts recovered from our excavations were transferred into acid free bags for storage. All materials from these excavations, including artifacts, field notes, and photographs will eventually be curated at the University of Georgia.
Chapter 4 - Results

Flake Attributes

The characterization of the chipped-stone assemblage from shovel tests afforded by my reanalysis is largely in agreement with Pluckhahn (2003:99-104). The assemblage was dominated by Coastal Plain chert (N=1910), while clear (N=708) and milky (N=81) varieties of quartz also made up significant portions. Tallahatta sandstone (N=12) and Knox or Ridge and Valley chert (N=10) compose only minimal portions of the overall sample.

The technological characterization of the shovel test lithics reveals that Coastal Plain chert and quartz were reduced using different strategies, with chert being employed as a more general toolstone for the production of flake tools and bifaces, while quartz was the focus of an expedient flake tool industry. Figure 4-1 illustrates the different frequencies of formal lithic artifacts by raw material, with quartz artifacts almost exclusively composed of cores while Coastal Plain chert is almost equally represented by cores and bifacial and unifacial tools.

This difference in reduction strategies between chert and quartz is also clearly expressed in the debitage assemblage, as seen in Figure 4-2. The quartz debitage is represented by a large proportion of angular debris (>40 percent), significant percentages of complete flakes and medial/distal flake fragments (~25 percent each), and small numbers of proximal flake fragments (<10 percent). In contrast, the chert assemblage is dominated by complete flakes (~45 percent), with nearly equal proportions of medial/distal and proximal flake fragments (>20 percent) and minimal angular debris (~10 percent). Pluckhahn (2011:128) has suggested that the quartz
assemblage at Kolomoki was likely the result of bipolar reduction, due to the preponderance of angular debris and shatter; however, the shovel test sample does not match the debitage signature of bipolar reduction, which is defined by minimal amounts of complete flakes (Kuijt et al. 1995). The relatively high proportion of complete quartz flakes in the Kolomoki shovel test assemblage is more likely the result of generalized core reduction; a number of the cores recovered from excavation and surface collections seem to be amorphous or unidirectional rather than bipolar (see Figures 4-49 and 4-50). Finally, some quartz cores from Kolomoki exhibit evidence for heavy battering, suggesting that bipolar reduction may have been employed as a strategy to prolong the use-lives of cores as they approached exhaustion.

Other flake attributes provide much weaker evidence of this divergence in technological strategy. The relative frequencies of dorsal cortex percentage and dorsal flake scars between the chert and quartz assemblages are relatively similar (Figures 4-3 and 4-4, respectively). As seen in Figure 4-5, platform types reveal quartz is represented by a higher proportion of cortical and crushed platforms, evidence of reduction of small nodules and bipolar reduction, respectively. Meanwhile, the chert assemblage contains more flat and complex platforms, indicative of the reduction of flake blanks and bifaces (Andrefsky 2005:95-98). Slight differences in the relative frequencies of flake terminations between quartz and chert are represented in Figure 4-6. Chi-squared tests comparing these attributes can be found in Table 4-1. Quartz is represented by more frequent feathered terminations, perhaps indicative of its use as a flake tool technology, while the chert assemblage contains more stepped and hinges specimens. Stepped terminations can often occur through buckling during reduction, usually when flakes are very thin relative to their overall length (Cotterell and Kamminga 1987:700), such as during biface thinning.
Figure 4-1: Formal lithic artifacts by raw material

Figure 4-2: Lithic debitage categories by raw material
Figure 4-3: Dorsal flake scars by raw material

Figure 4-4: Dorsal cortex by raw material
Figure 4-5: Platform type by raw material

Figure 4-6: Flake termination type by raw material
Table 4-1: Results of Chi-squared tests comparing categorical debitage attributes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi-Squared Statistic</th>
<th>df</th>
<th>Sig. 2-tailed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal Scars (N)</td>
<td>2.065</td>
<td>3</td>
<td>.559</td>
</tr>
<tr>
<td>Dorsal Cortex</td>
<td>22.683</td>
<td>3</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Platform Type</td>
<td>19.123</td>
<td>3</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Termination</td>
<td>10.762</td>
<td>3</td>
<td>.013</td>
</tr>
</tbody>
</table>

Measured flake attributes (maximum length, maximum width, medial thickness, and weight) and platform attributes (platform width and platform depth) all had heavily rightward-skewed distributions, which is to be expected given the reductive process of lithic production (i.e. as reduction proceeds, flakes grow smaller and amount of flakes increases). Despite this common trend, the difference in technological strategy noted above was present when chert and quartz attributes were compared to one another. Figures 4-7 through 4-18 detail the distribution of chert and quartz debitage attributes. Note that the exceptionally long rightward tails of chert distributions have been clipped somewhat to maintain a more appropriate scale for the side-by-side comparison of both materials. The long tails of chert distributions generally do not represent “anomalous” cases, but instead indicate larger flakes, possibly discarded blanks, which occurred throughout the debitage assemblage – larger angular pieces of chert were generally classified as cores due to the presence of flake scars and platforms and were correspondingly excluded from the debitage analysis. Distributions of debitage metrics for quartz generally contain smaller rightward tails, indicating less large pieces of debitage. As Figures 4-15 through 4-18 show, platform measurements for quartz have bimodal distributions, especially platform depth. These bimodal distributions may indicate discrete stages of reduction, perhaps amorphous and bifacial as suggested above. The summary statistics for these attributes are presented in Tables 4-2 and
Figure 4-7: Histograms presenting length distributions by raw material

Figure 4-8: Box plots presenting length distributions by raw material
Figure 4-9: Histograms presenting width distributions by raw material

Figure 4-10: Box plots presenting width distributions by raw material
Figure 4-11: Histograms presenting thickness distributions by raw material

Figure 4-12: Box plots presenting thickness distributions by raw material
Figure 4-13: Histograms presenting weight distributions by raw material

Figure 4-14: Box plots presenting weight distributions by raw material
Figure 4-15: Histograms presenting platform width distributions by raw material

Figure 4-16: Box plots presenting platform width distributions by raw material
Figure 4-17: Histograms presenting platform depth distributions by raw material

Figure 4-18: Box plots presenting platform depth distributions by raw material
4-3. In general, chert debitage is characterized by longer, wider, and thinner flakes, which reflects a reduction strategy centered on the removal of relatively thin flakes with large surface areas, such as in biface thinning, while quartz is represented by smaller, thicker debitage, mostly in the form of angular debris. Chert debitage was, on average, heavier than quartz debitage.

Given the heavy rightward skew of all attribute distributions, medians offer better measures of central tendency. Median quartz debitage weight was higher than median chert weight, indicating that the majority of quartz debitage was generally heavier, probably due to greater thickness. Comparison of platform attributes between the two materials reveals a great degree of similarity in platform width, but a clear difference in platform depth, especially when medians are compared. While greater overall thickness for quartz reflected the presence of large amounts of angular debris in the assemblage, the difference in platform depth indicates that quartz flakes were also generally thicker, further influencing the trend of heavier quartz debitage. Table 4-4 displays the results of t-tests performed for each attribute, conducted without the assumption of equal variance, which show significant differences between chert and quartz for all flake attributes with the exception of platform width.

These results indicate Kolomoki’s inhabitants employed different technological strategies for the exploitation of quartz and chert. The chert assemblage is characterized by relatively large, thin flakes, largely tied to the production and thinning of flake blanks for bifacial tools, as well as general flake tool and unifacial tool production, while the quartz assemblage is represented by large quantities of cores, angular debris, and thick flakes which were probably used as expedient tools. Given the evidence for differential use of these materials, their distributions across the site can inform us of the spatial organization of lithic production at Kolomoki.
Table 4-2: Summary statistics for debitage attributes by raw material

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Coastal Plain Chert N=1843</th>
<th>Quartz N=741</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Maximum Length (mm)</td>
<td>Mean</td>
<td>16.014</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>14.100</td>
</tr>
<tr>
<td></td>
<td>Variance</td>
<td>61.158</td>
</tr>
<tr>
<td></td>
<td>Std. Deviation</td>
<td>7.820</td>
</tr>
<tr>
<td></td>
<td>Coefficient of Variation</td>
<td>.488</td>
</tr>
<tr>
<td>Minimum</td>
<td>5.000</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>69.500</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>64.500</td>
<td></td>
</tr>
<tr>
<td>Skewness</td>
<td>2.404</td>
<td>.057</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>8.737</td>
<td>.114</td>
</tr>
<tr>
<td>Maximum Width (mm)</td>
<td>Mean</td>
<td>16.014</td>
</tr>
<tr>
<td></td>
<td>Median</td>
<td>13.580</td>
</tr>
<tr>
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### Table 4-3: Summary statistics for platform attributes by raw material

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</tr>
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<td>Median</td>
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<td>Variance</td>
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<td>Std. Deviation</td>
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<td></td>
<td>Minimum</td>
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<td></td>
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<td>Skewness</td>
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<td></td>
<td>Kurtosis</td>
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### Table 4-4: Results of t-tests comparing flake and platform attributes by raw material

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<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
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<td>Medial Thickness (mm)</td>
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<td>-.913</td>
<td>.126</td>
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<tr>
<td>Weight (g)</td>
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<td>.133</td>
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<td>Platform Width (mm)</td>
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<td>.867</td>
<td>.045</td>
<td>.267</td>
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<td>Platform Depth (mm)</td>
<td>-3.229</td>
<td>.001</td>
<td>-.375</td>
<td>.116</td>
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</table>
GIS and Distributions

Distributions of most artifact classes generally conformed to the ovular village plan following the enclosures, as originally proposed by Pluckhahn (2003). Figures 4-19 and 4-20 detail the distribution of total ceramics by count and by weight and Figures 4-21 and 4-22 display the distribution of Swift Creek ceramics, also by count and weight. Total ceramics serves as the best proxy for intensity of occupation at the site across all time periods - especially by weight, due to the fragmentary nature of ceramics in non-mound areas. The low density of total ceramics along the southwestern portion of the enclosure is conspicuous. Meanwhile, Swift Creek ceramics, making up the majority of decorated types during early phases of occupation, occur in low densities across the southern portions of the village, especially by weight. These distributions indicate the southern areas of the enclosure may have been occupied late, and that only the eastern portion saw intensive habitation. However, Pluckhahn (2011; Pluckhahn et al. 2006) recovered a relatively late date (ca. A.D.650) from a house along the northern enclosure that produced an early ceramic assemblage with large amounts of Swift Creek ceramics, indicating certain aspects of the site’s chronology may need to be refined.

Distributions of lithic production debris, discussed below, were considered in relation to ceramics to determine if differences in lithic densities were independent of ceramics or if they instead simply reflect longer duration or higher intensity of occupation. Figure 4-23 illustrates that Coastal Plain chert debris is primarily concentrated in the northern and southwestern sections of the village. High ratios of Coastal Plain chert to ceramics in these areas indicate that chert production was probably not a function of higher intensity of occupation. Furthermore, Coastal Plain chert conforms neatly with the village as identified by ceramic distributions, indicating that most chert was produced and used in domestic contexts at Kolomoki. The picture
for quartz is somewhat different, with quartz debris scattered throughout the site (Figure 4-24). High ratios of quartz debris, indicating quartz production and use was not associated with higher intensity of occupation, are clustered in the northern and southwestern sections of the village, similar to chert. However, high quartz ratios also occur in near-mound areas, especially in association with Mounds A, D, and H. When compared, these ratio distributions indicate that the northern and southwestern sections of Kolomoki’s village were loci of high lithic production, but also that Coastal Plain chert was produced and used almost exclusively in domestic areas while quartz production and use may have occurred in ceremonial as well as domestic contexts.

The distribution and intensity of reduction for Coastal Plain chert can be seen in Figures 4-25 through 4-27. These maps show that Coastal Plain chert is heavily concentrated in the western half of the northern enclosure, both by count and weight. Figure 4-27 exhibits a spotty, high density distribution across much of the site, indicating dispersed core reduction (moderate to high weight/low count), while the northwestern section of the enclosure represents late stage reduction (moderate to high weight/high count). As expected, interior areas of the site are confined to the lowest density interval, indicative of limited lithic production (low weight/low count).

Quartz is represented by a general trend of dispersed core reduction in most areas except the western end of the northern enclosure, the eastern portion of the southern enclosure, and the far west of the site near Mound E (Figures 4-28 through 4-30). The pattern of quartz reduction along the northern enclosure seems to be a weak inverse of Coastal Plain chert, while the distribution in the southwest forms a continuous arc of core reduction opening to the south. When divided into clear (Figures 4-31 and 4-32) and milky (Figures 4-33 and 4-34) categories, the distribution of quartz becomes even more interesting, with a clear restriction of milky quartz
Figure 4-19: Density map of total ceramics by count

Figure 4-20: Density map of total ceramics by weight
Figure 4-21: Density map of Swift Creek ceramics by count

Figure 4-22: Density map of Swift Creek ceramics by weight
Figure 4-23: Mapped ratio of Coastal Plain chert to total ceramics

Figure 4-24: Mapped ratio of total quartz to total ceramics
Figure 4-25: Density map of Coastal Plain chert by count

Figure 4-26: Density map of Coastal Plain chert by weight
Figure 4-27: Density map of Coastal Plain chert by weight/count
Figure 4-28: Density map of total quartz by count

Figure 4-29: Density map of total quartz by weight
Figure 4-30: Density map of total quartz by weight/count
Figure 4-31: Density map of clear quartz by count

Figure 4-32: Density map of clear quartz by weight
Figure 4-33: Density map of milky quartz by count

Figure 4-34: Density map of milky quartz by weight
along the southern enclosure. The highest density of milky quartz by weight corresponds to the aforementioned arc.

Tables 4-5 and 4-6 contain the results of Pearson’s correlations testing the co-occurrence of total ceramics, Swift Creek ceramics, Coastal Plain chert, and total quartz in shovel tests by count and weight. Notably, while all artifact classes co-occur at statistically significant levels, Coastal Plain chert exhibits the weakest correlation by weight and count with all other artifact classes, reflecting its heavy concentration along the northeastern portion of the village.

Using the Grouping Analysis tool in ArcMap to perform a spatial cluster analysis revealed a very distinct pattern in the distribution of lithic assemblages when separated by artifact counts (Figure 4-35). Figure 4-36 presents the grouping criteria, in which presence of milky quartz and high numbers of chert are the primary determinants of group membership. Separations by weight and weight/count (Figures 4-37 and 4-38) did not produce spatially discrete patterns, indicating that lithic assemblages at Kolomoki contain similar amounts of lithic material by weight and are differentiated by intensity of reduction activities (chert) and presence of spatially restricted materials (milky quartz).

Quartz Use Wear

Through my microscopic analysis of the quartz assemblage from Pluckhahn’s Test Unit 3, I identified probable use-wear on 3 artifacts: 1 burinated flake with deep parallel striations running along the ventral side of the flake near the burin-like protrusion, 1 flake with light edge-chipping and a smear of soil on the flake’s ventral side that ran generally parallel to the chipped edge, and 1 oddly shaped core-like object with a chipped and abraded surface and chipping along an edge produced by a hinged flake termination.
Table 4-5: Results of Pearson's correlation of artifact classes by count

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<th></th>
<th>Swift Creek (N)</th>
<th>Total Ceramic (N)</th>
<th>CP Chert (N)</th>
<th>Total Quartz (N)</th>
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<tr>
<td>Correlation</td>
<td>1</td>
<td>.760**</td>
<td>.281**</td>
<td>.566**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>N</td>
<td>1309</td>
<td>1309</td>
<td>1309</td>
<td>1309</td>
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<tr>
<td>Total Ceramic (N)</td>
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</tr>
<tr>
<td>Correlation</td>
<td>.760**</td>
<td>1</td>
<td>.355**</td>
<td>.643**</td>
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<tr>
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<td>&lt;.001</td>
<td>&lt;.001</td>
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<tr>
<td>N</td>
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<td>1309</td>
<td>1309</td>
<td>1309</td>
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<tr>
<td>CP Chert (N)</td>
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<td></td>
<td></td>
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<tr>
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<td>.355**</td>
<td>1</td>
<td>.409**</td>
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<td>&lt;.001</td>
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<td>N</td>
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<td>1309</td>
<td>1309</td>
<td>1309</td>
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<tr>
<td>Total Quartz (N)</td>
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<td></td>
</tr>
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<td>.643**</td>
<td>.409**</td>
<td>1</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>&lt;.001</td>
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<td>1309</td>
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**. Correlation is significant at the 0.01 level (2-tailed).

Table 4-6: Results of Pearson's correlation of artifact classes by weight

<table>
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<th>Swift Creek (g)</th>
<th>Total Ceramic (g)</th>
<th>CP Chert (g)</th>
<th>Total Quartz (g)</th>
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</thead>
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<td>.163**</td>
<td>.321**</td>
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<td>&lt;.001</td>
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<td>1309</td>
<td>1309</td>
<td>1309</td>
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<tr>
<td>Total Ceramic (g)</td>
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<tr>
<td>Correlation</td>
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<td>.294**</td>
<td>.375**</td>
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<td>&lt;.001</td>
<td>&lt;.001</td>
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<td>N</td>
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<td>1309</td>
<td>1309</td>
<td>1309</td>
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<td>Coastal Plain Chert (g)</td>
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<td></td>
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<td>.294**</td>
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<td>.160**</td>
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<tr>
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<td>&lt;.001</td>
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**. Correlation is significant at the 0.01 level (2-tailed).
Figure 4-35: Grouping of lithic assemblages from shovel tests by count

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<th>Min</th>
<th>Max</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>Share</th>
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<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<td>2</td>
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<td>1.0000</td>
<td>3.0000</td>
<td>0.6667</td>
<td>1.0000</td>
<td>0.3333</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>0.0952</td>
<td>0.2935</td>
<td>0.0000</td>
<td>1.0000</td>
<td>0.3333</td>
<td>1.0000</td>
<td>0.3333</td>
<td>+</td>
</tr>
<tr>
<td>Total</td>
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<td>0.3441</td>
<td>0.0000</td>
<td>3.0000</td>
<td>1.0000</td>
<td>0.0000</td>
<td>1.0000</td>
<td>+</td>
</tr>
</tbody>
</table>

Figure 4-36: Grouping criteria of lithic assemblages from shovel tests by count
Figure 4-37: Grouping of lithic assemblages from shovel tests by weight

Figure 4-38: Grouping of lithic assemblages from shovel tests by weight/count
The analysis using the SEM provided some interesting results. Use-wear in the form of poorly-developed polish was identified on the flake with edge chipping mentioned above. This polish was associated with the chipped edge and was visible at 800x magnification. One location on this flake’s edge was further examined at 1500x magnification and a pattern of poorly-developed striations and pits were seen, aligned along the same axis with one another and diagonally to the tool’s edge (Figure 4-39). This pattern of striations and pitting indicates that the flake may have been used as a cutting tool and that cuts were performed in one direction. All other archaeological artifacts showed no evidence for use-wear. The core-like object with the chipped and polished area and retouch chipping was not included in the SEM sample because its wear was obvious enough to be unequivocally identified with the digital microscope and because it was so large relative to the other flakes examined with the SEM that it would have further

Figure 4-39: View of weak polish and striations on quartz flake tool at 1,500x magnification. White line approximates direction of wear
reduced the already small sample. The limited presence of identifiable use-wear in this sample indicates that quartz may not have been used, a conclusion I find unlikely. Alternatively, quartz may have been used as expedient tools and discarded after use with no subsequent retouch or modification. A major shortcoming of this use-wear study was an explicit focus on modified flake tools like burinated flakes, which are notably rare at Kolomoki in general.

Excavations and Radiocarbon Dating of the Southern Enclosure

Investigations of the southern village at Kolomoki included the excavation of four 1-x-2 m Test Units (TUs 21/23-25), a 1-x-1 m Test Unit (TU 20), and a systematic surface collection over a 120-x-60 m grid at 20 m intervals. Excavations will be reported in greater detail elsewhere, including an additional two 1-x-2 m Test Units not seen here (West forthcoming). Here I focus on the chronology of the southern village, illustrated by ceramic assemblages and radiocarbon dates from feature contexts, as well as intensity of occupation, represented by artifact densities.

Test Units were placed along the arc of relatively high surface artifact densities corresponding to the southern portion of enclosure, with TUs 20, 21/23, and 22 sitting atop a slightly elevated landform (Figure 4-40). The planting schedule of landowners pushed units towards the edges of active agricultural fields. Tables 4-7 and 4-8 detail the ceramic and lithic contents of these Test Units. Note that TUs 21/23 and 25, which contained the highest ceramic densities and probably most accurately reflect overall ceramic assemblages in the southern village, contain high proportions of Swift Creek ceramics. Additionally, four features (1, 2, 5, and 7 in Test Units 21/23, 22, 24, and 25, respectively) produced charcoal suitable for AMS radiocarbon dating.
Figure 4-40: Location of Test Units along Kolomoki's southern village

Table 4-7: Ceramic densities of Test Units along Kolomoki's southern village

<table>
<thead>
<tr>
<th>TU</th>
<th>Area (sq. meters)</th>
<th>Residual N g</th>
<th>Plain N g</th>
<th>Swift Creek N g</th>
<th>Weeden Island N g</th>
<th>% Swift Creek</th>
<th>% Weeden Island</th>
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</thead>
<tbody>
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<td>112.5</td>
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<td>48.9</td>
<td>16</td>
<td>61.9</td>
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<tr>
<td>24</td>
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<td>76</td>
<td>50.6</td>
<td>9</td>
<td>45.0</td>
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<td>458.0</td>
<td>142</td>
<td>890.5</td>
<td>137</td>
<td>635.8</td>
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Table 4-8: Lithic densities of Test Units along Kolomoki's southern village

<table>
<thead>
<tr>
<th>TU</th>
<th>Area (sq. meters)</th>
<th>CP Chert N g</th>
<th>Clear Quartz N g</th>
<th>Milky Quartz N g</th>
<th>Other Chert N g</th>
<th>Orthoquartzite N g</th>
<th>Metamorphic N g</th>
<th>Mica N g</th>
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<tr>
<td>20</td>
<td>1</td>
<td>97</td>
<td>163.8</td>
<td>31</td>
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<td>18</td>
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<td>21/23</td>
<td>2</td>
<td>105</td>
<td>121.1</td>
<td>76</td>
<td>69.9</td>
<td>14</td>
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<td>97</td>
<td>125.7</td>
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A 120-x-60 m grid for systematic surface collection was placed in a recently plowed field east of the landform containing TUs 20, 21/23, and 22 (Figures 4-41 and 4-42). Surface collections were conducted in a 2 m radius at 20 m intervals. Table 4-9 displays artifacts recovered by count. Additionally, the field was surveyed for diagnostic artifacts such as pp/ks and decorated ceramics, as well as lithic cores, which were piece-plotted using a total station (Figure 4-42). Figures 4-43 through 4-54 present some selected artifacts from these collections. Artifact densities, especially ceramics, were concentrated to the eastern end of the grid, in agreement with artifact densities identified during my reanalysis of the shovel test material. Additional diagnostic artifacts were collected from other locations along the southern village.

Four new radiocarbon dates were taken from features located in Test Units 21/23, 22, 24, and 25 (Table 4-10 and Figure 4-55). Dates from Test Units 21/23 and 25 were recovered from a probable post-mold containing charred cane and pine charcoal and a large pit feature, respectively. These two dates, overlapping at roughly A.D. 680-770, place the occupation of the southern section of Kolomoki’s village relatively late in Pluckhahn’s (2003) chronology of the site, in the Kolomoki IV phase. However, an early date of A.D. 127-311, recovered from a large, basin-shaped pit in Test Unit 21/23 indicates some activity in the vicinity of the southern village very early in the site’s chronology. Notably, this date is contemporaneous with and possibly earlier than dates recovered from the submound midden of Mound D and Test Unit 3, both dating to Pluckhahn’s (2003) Kolomoki I phase. The presence of early activity in this area is perhaps unsurprising. This feature is located atop the highest natural landform at Kolomoki, which could have provided a useful vantage point during the initial layout of Kolomoki’s early mound phases and community plan. Test Unit 21/23 also corresponds with the position of the enclosure, perhaps indicating its early construction as Pluckhahn (2003) suggests. Finally, a very
Figure 4-41: Location of surface collection grid at Kolomoki

Figure 4-42: Surface collections with piece-plotted artifacts
### Table 4-9: Artifacts recovered during systematic surface collection by provenience

<table>
<thead>
<tr>
<th></th>
<th>EAST</th>
<th>NORTH</th>
<th>Chert Debitage</th>
<th>Clear Quartz Debitage</th>
<th>Milky Quartz Debitage</th>
<th>Chert Core</th>
<th>Clear Quartz Core</th>
<th>Milky Quartz Core</th>
<th>Lithic Tool</th>
<th>Decorated Ceramic</th>
<th>Plain Ceramic</th>
<th>Dec/Fold Ceramic Rim</th>
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<tbody>
<tr>
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<td>680</td>
<td></td>
<td>1</td>
<td>3</td>
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Figure 4-43: Complicated Stamped ceramics from surface collections

Figure 4-44: Weeden Island ceramics from vicinity of Mounds F and G, including Weeden Island Red (upper right), possible Napier Complicated Stamped or incised (lower left), and Weeden Island Incised (lower right), as well as a pipe fragment (upper left)
Figure 4-45: Coastal Plain chert PP/Ks (left and right) and unfinished, heat-treated biface (center)

Figure 4-46: PP/Ks of Tallahatta sandstone (left) and Ridge and Valley chert (right). These tools, made from non-local materials, seem to have been extensively curated
Figure 4-47: Large flakes of Coastal Plain chert

Figure 4-48: Heat-treated chert core with large inclusion/fault
Figure 4-49: Milky quartz core with a formal platform

Figure 4-50: Small triangular projectile point manufactured from milky quartz
Figure 4-51: A quartz "ball," or heavily battered core

Figure 4-52: Another heavily battered quartz core or "ball"
Figure 4-53: Fragments of worked quartz crystals

Figure 4-54: Quartz hammerstone with battered ends and abraded side
late date of A.D. 910-1030 was retrieved from Test Unit 24. Surface collections in the vicinity of Test Unit 24 and Mounds F and G recovered high proportions of Weedon Island series ceramics and a late-Woodland triangular projectile point, both of which are generally associated with later occupation of the site.

These radiocarbon dates place the occupation of a large section of the southern village late in the site’s chronology, in the Kolomoki IV phase, while ceramic evidence from these same excavations place occupation in the Kolomoki I-II phases due to the high proportions of Swift Creek ceramics (Pluckhahn 2003:20). Table 4-9 illustrates that this discrepancy is reflected in Block A in the north of the village as well. Based on the similarity of ceramic assemblages in conjunction with later-than-expected dates clustering around A.D. 550-750, I argue that at least parts of the northern and southern sections of the Kolomoki’s village were occupied at roughly the same time, with the abandonment of the Block A house and the southern village separated by as little as one or two generations. Consequently, the economic differentiation between village segments at Kolomoki identified by my analysis of lithic production debris was probably also contemporaneous, rather than a result of temporal variation.

This interval of contemporaneous and relatively intensive occupation of Kolomoki’s village occurred about two centuries after that initially proposed by Pluckhahn (2003). However, radiocarbon dates from Test Units 21/23 and 24 indicate that the southern sections of the village saw activity centuries earlier and later than the period of intensive village occupation. Together, these dates suggest three episodes of activity within the southern areas of Kolomoki, coinciding with the site’s early history and potentially its founding and initial design, the aggregation of its large village, and a later occupation associated with the decline of Swift Creek pottery in favor of Weedon Island series ceramics.
### Table 4-10: Radiocarbon dates and ceramic phases from village and mound contexts at Kolomoki

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Provenience</th>
<th>Material</th>
<th>13C/12C Ratio (0/00)</th>
<th>Conventional Radiocarbon Age</th>
<th>2 Sigma Calibrated Results*</th>
<th>Phase by Ceramics</th>
<th>Phase by Radiocarbon Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-206786</td>
<td>Block A F. 57, Zone B</td>
<td>Carya nutshell</td>
<td>-25.3</td>
<td>1550±40 BP</td>
<td>A.D. 418 to 594</td>
<td>I-II</td>
<td>II-III</td>
</tr>
<tr>
<td>Beta-206785</td>
<td>Block A F. 57, Zone A</td>
<td>Carya nutshell</td>
<td>-26.1</td>
<td>1480±40 BP</td>
<td>A.D. 433 to 651</td>
<td>I-II</td>
<td>II-III</td>
</tr>
<tr>
<td>Beta-234443</td>
<td>Block A F. 57, Zone B</td>
<td>maize kernel</td>
<td>-27.4</td>
<td>1420±40 BP</td>
<td>A.D. 565 to 666</td>
<td>I-II</td>
<td>III</td>
</tr>
<tr>
<td>Beta-161791</td>
<td>Block A F. 131, Zone B</td>
<td>wood charcoal</td>
<td>-25</td>
<td>1280±70 BP</td>
<td>A.D. 638 to 940</td>
<td>I-II</td>
<td>IV</td>
</tr>
<tr>
<td>Beta-165118</td>
<td>Block A F. 131, Zone A</td>
<td>bone</td>
<td>-20.7</td>
<td>1160±40 BP</td>
<td>A.D. 770 to 980</td>
<td>I-II</td>
<td>IV</td>
</tr>
<tr>
<td>UGA22638</td>
<td>TU23 F. 1 Bottom Float</td>
<td>wood charcoal</td>
<td>-27.6</td>
<td>1820±25 BP</td>
<td>A.D. 127 to 311</td>
<td>I-II</td>
<td>I</td>
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<td>cane</td>
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<td>IV</td>
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<tr>
<td>Beta-165119</td>
<td>Blanton's Honey Bear Pit</td>
<td>bone</td>
<td>N/A</td>
<td>1120±40 BP</td>
<td>A.D. 777 to 1013</td>
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**Village Context (South)**

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<th>Sample Number</th>
<th>Provenience</th>
<th>Material</th>
<th>13C/12C Ratio (0/00)</th>
<th>Conventional Radiocarbon Age</th>
<th>2 Sigma Calibrated Results*</th>
<th>Phase by Ceramics</th>
<th>Phase by Radiocarbon Dates</th>
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<td>Block D TU18, F. 34</td>
<td>wood charcoal</td>
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<td>1290±60 BP</td>
<td>A.D. 648 to 881</td>
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<td>Block D F. 147B, Zone B</td>
<td>Carya nutshell</td>
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<td>A.D. 774 to 978</td>
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<td>IV</td>
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<tr>
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<td>A.D. 892 to 1028</td>
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<td>IV+</td>
</tr>
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<td>UGA22639</td>
<td>TU24 F. 5</td>
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<td>-26.7</td>
<td>1040±25 BP</td>
<td>A.D. 906 to 1029</td>
<td>IV</td>
<td>IV+</td>
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**Weedon Island Village Context**

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<th>Conventional Radiocarbon Age</th>
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<th>Phase by Ceramics</th>
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<td>I-II</td>
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<td>N/A</td>
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<td>wood charcoal</td>
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<td>1360±50 BP</td>
<td>A.D. 595 to 770</td>
<td>IV</td>
<td>III-IV</td>
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* Calibrated with OxCal v4.2.4 Bronk Ramsey (2013); r:5; IntCal3 atmospheric curve (Reimer et al. 2013).
Figure 4-55: Plot of radiocarbon dates from Kolomoki by general provenience
Chapter 5 - Discussion

New radiocarbon dates and similarity in ceramic assemblages (see Table 5-1) have established the contemporaneity of the northern and southern sections of the village at Kolomoki at a date later than previously assumed. Furthermore, patterned distributions of lithic debris suggest multiple social or economic divisions within the village. The presence of spatially restricted areas of intensive lithic production, specifically the arc of quartz core reduction debris along the southwestern portion of the enclosure and the late stage chert reduction area along the eastern half of the northern enclosure likely represent discrete activity areas, possibly associated with households or groups of households due to their location along the proposed village (Pluckhahn 2003). Furthermore, the restriction of milky quartz to the southern portions of the village, and especially to the aforementioned arc, hints at a north-south division at the site. This dual pattern is also represented by certain aspects of mound construction and symbolism. In sum, these features of the domestic space at Kolomoki indicate economic or social differentiation within the village in agreement with suggestions by Pluckhahn (2003:104), but to a greater degree than previously envisioned.

Lithic assemblages bearing spatially distinct distributions based on raw material have been interpreted to represent different social identities (Hayden et al. 1996). Hayden and colleagues (1996) argue this pattern at Keatley Creek in British Columbia resulted from distinct social groups exploiting particular raw materials as they made seasonal rounds throughout separate areas of the surrounding landscape, though recent radiocarbon dates from the site have
undermined this conclusion (Prentiss et al. 2003, Prentis et al. 2005). Conversely, Smith (2015) has argued that patterning in lithic debitage and other production debris within communal longhouses of the Pacific Northwest stem from economic differentiation of segments of the population based on status. Excavations along the village arc at Kolomoki have produced little evidence for status distinctions, but differences in the form and intensity of lithic production along village segments suggests horizontally organized economic divisions, possibly related to specialization in certain industries.

The heavy clustering of chert debris in the northeast of the site is not replicated in any other parts of the village. I do not believe this pattern can be explained as purely the result of more intensive occupation as ceramics, both total and Swift Creek, are well represented in other areas of the village with the possible exception of the southwestern portion. The exceptional

<table>
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<th>ID Ceramics (g)</th>
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<th>Swift Creek (g)</th>
<th>% Swift Creek (N)</th>
<th>% Swift Creek (g)</th>
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</table>
density of chert debris in the northeast is even more apparent when compared with lithic assemblages from Test Units (Pluckhahn 2003:126-145) and block excavations (Pluckhahn 2003:146-179, 2011).

Test Units 10, 13, and 15 are located within the area of high chert density, with TU 15 located along its western margin. As seen in Table 5-2, these three units contain the highest overall lithic counts, as well as some of the highest proportions of chert relative to total lithics. Furthermore, a number of units with significantly lower lithic counts contain comparable or greater quantities of ceramics. Table 5-3 illustrates that excavation blocks generally conform to this trend as well. When equalized for excavation area, Block A and its associated semi-subterranean house, which is located within the high-density chert reduction area contains 1.8 times as much chert by count as Block B, located farther west along the enclosure, but only 1.2 times many ceramics. More dramatically, Block A contains almost 8.8 times as much chert as Block D, a late-phase house south of Mounds A and B, but only 1.5 times as many ceramics when equalized for area. I made a rough attempt to equalize the block excavations by volume to account for the large extent and depth of the house pit in Block A. This fairly liberal approximation was made by increasing the area of Block A to 43 square meters (adding 12 square meters for the 3-x-2.5-x-.5 m main pit and 1 square meter each for the fire pit and entrance ramp, which vary in depth from 15 to 25 cm in depth) given that the depth of the overlying plowzone in this area was reported to be around 30 cm (Pluckhahn 2003:148). With this equalization for volume, the lithic density of Block A is 5.9 times that of Block D while ceramic densities are nearly equal.

Pluckhahn (2003, 2011:200) reports that the chert assemblage from Block A is composed of more than 70 percent late stage debris, compared to only around 57 percent for nearby Block
Table 5-2: Coastal Plain chert and clear quartz as proportions of total lithics from Test Units

<table>
<thead>
<tr>
<th>Test Unit</th>
<th>Area (sq. meters)</th>
<th>Total Lithics (N)</th>
<th>Total Lithics (g)</th>
<th>CP Chert (N)</th>
<th>CP Chert (g)</th>
<th>% CP Chert (N)</th>
<th>% CP Chert (g)</th>
<th>% Chert Late Debris (N)</th>
<th>% Chert Late Debris (g)</th>
<th>Clear Quartz (N)</th>
<th>Clear Quartz (g)</th>
<th>% Clear Quartz (N)</th>
<th>% Clear Quartz (g)</th>
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<td>N/A</td>
<td>47.1</td>
<td>N/A</td>
<td>70.0</td>
<td>N/A</td>
<td>43</td>
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<td>50.6</td>
<td>N/A</td>
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<td>102</td>
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<td>57.8</td>
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Table 5-3: Swift Creek and Coastal Plain chert as proportions of total ceramics and total lithics, respectively, from excavation blocks

<table>
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<th>Excavation Block</th>
<th>Area (sq. meters)</th>
<th>ID Ceramics (N)</th>
<th>ID Ceramics (g)</th>
<th>Swift Creek (N)</th>
<th>Swift Creek (g)</th>
<th>% Swift Creek (N)</th>
<th>% Swift Creek (g)</th>
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<table>
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<tr>
<th>Excavation Block</th>
<th>Area (sq. meters)</th>
<th>Total Lithics (N)</th>
<th>Total Lithics (g)</th>
<th>CP Chert (N)</th>
<th>CP Chert (g)</th>
<th>% CP Chert (N)</th>
<th>% CP Chert (g)</th>
<th>% Chert Late Debris (N)</th>
<th>% Chert Late Debris (g)</th>
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</thead>
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<td>60.6</td>
<td>60.6</td>
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</table>
B and 55 percent for Block D, which he interprets as evidence for greater residential stability. In light of the disparity between Block A and other excavations in terms of quantity of chert and the relative proportion of late stage debris, I interpret this portion of the village as a discrete tool production area. The association of high-intensity tool production with a house suggests a large portion of this activity was tied to a single household or group of households; given the nearly 200 meter extent of the high-density chert distribution, I favor the later. A similar pattern in the organization of stone tool production is described for the contemporaneous McKeithen site in northern Florida (Johnson 1987). Johnson (1987) argues that specialized biface production followed changes in McKeithen’s population, evident in the spatial clustering of late-stage lithic debitage as well as heat treated and hinged flakes during the height of McKeithen’s occupation.

The distribution of quartz revealed exploitation of the material occurred throughout the site, including village and near-mound contexts, and that production was focused on expedient flake and core tools. A number of technological factors may have predisposed Kolomoki’s inhabitants to use, and perhaps favor, quartz flake tools for certain activities. Quartz generally occurs in smaller nodules than chert, therefore chert may have been reserved for flake blanks and larger flake tools. The recovery of a Late Woodland triangular point made of milky quartz from the surface in the vicinity of Mound G suggests that nodule and flake size was probably a limiting factor in the use of quartz for more formal tools requiring extensive modification. Late Woodland triangular points are much smaller than most other projectile point types, making them possible to produce with quartz blanks unlike other, larger points. Also, due to angular cleavage planes of individual crystals, quartz flakes and angular debris usually contain sharp edges and protrusions uninterrupted by the cortex and fossil inclusions that characterize most lower-quality Coastal Plain cherts (see Figures 4-39 and 4-40), making them ideal for flake tools
and engravers with little need for modification. The data presented in Table 5-2 show that quartz made up a far greater proportion of the overall lithic assemblage in certain areas of the site than originally expected, providing further contrast between the economic activities engaged in by people living in those parts of the village and those engaging in chert tool production in the northeast of the site. The lithic assemblages of some units exceed 50 percent quartz by count, well above the roughly 25 percent for the shovel test assemblage.

The 200 meter arc of milky quartz debris along the southwest enclosure discussed above conforms to a pattern suggestive of a group of households or other large activity area; excavations along the eastern wing of the arc (West forthcoming) have produced evidence for some degree of occupation. Notably, the southwestern portion of the site was initially sampled though surface collections rather than shovel tests, potentially privileging the collection of cores, though the patterning of this feature suggests it is not simply a product of survey methods. I tentatively characterize the arc as an area of intensive quartz core reduction, but further work will be required to corroborate my interpretation. A significant portion of the lithic assemblage from shovel tests in the southeastern area of the village also consisted of milky quartz, though without the formal patterning seen in the southwestern arc. As with the northeastern and southwestern activity areas, the southeastern segment also measures roughly 200 meters.

As discussed previously, the use of milky quartz is largely restricted to the southern areas of the site, presenting the possibility that the southwestern and southeastern portions of the village were linked in some way, despite their relatively discrete clustering and separation from one another. A north-south duality is present in the mound symbolism at Kolomoki: the southern half of the summit of Mound A rises about 3 feet higher than the northern half, while the main burial mound, Mound D contains evidence for different colored soils being used in northern and
southern halves of its fill (Pluckhahn 2003:89). Radiocarbon dates indicate that the village at Kolomoki continued to be occupied after the bulk of mound construction activities ceased; however, the village may have been organized according to the same logic of duality, perhaps related to a reciprocal moiety that crosscut social and kin divisions, as seen in other large villages (Tuzin 2001). For instance, Johnson (1987:40) suggests lineage or moiety organization of lithic production at nearby McKeithen.

The northwestern portions of the village and areas east of Mound A did not exhibit any unique patterns in their lithic or ceramic assemblages that suggest economic differentiation, though poor preservation of organics, heavy agricultural disturbance, and erosion prevent the identification of more ephemeral activity areas, such as those associated with working wood, bone, or even pottery production.

The spatial organization of divergent lithic assemblages throughout the village points to economic differentiation between discrete habitation clusters along the generalized arc of the village outlined by the enclosure. I interpret this pattern as evidence for the presence of multiple distinct corporate groups, possibly based on extended households, lineages, or clans within the community at Kolomoki, as has been argued for other communities of similar scale (Birch 2012; Flannery 2002; Gilman and Stone 2013; Hayden et al. 1996; Johnson 1987; Rautman 2014; Schachner 2010; Smith 2015; Wilson 2008; Wilson et al. 2006). Though the definition of a household remains somewhat fluid regarding patterns of co-residence and habitation, its function as a society’s basic economic unit is well attested (Cobb and Nassaney 2002; Flannery 1994; Pluckhahn 2010a; Wesson 2008; Wilk and Rathje 1982).

Pluckhahn (2011, 2015) interprets emergence of individualized household economies as a major factor of the Late Woodland to Early Mississippian transition in the Southeast. He
suggests that this shift coincided with the decline of rituals organized around extended kin
groups, clans, and other corporate social formations that characterized Woodland period
ceremonialism. While the evidence presented here suggests that corporate groups at Kolomoki
experienced some degree of economic differentiation, they also probably cooperated in the
execution of communal rituals. Spielmann (2008) interprets Middle Woodland ceremony among
the Hopewell of the Ohio River Valley as similarly organized, postulating that segmented
enclosures may represent the cooperation of multiple corporate groups. Many of the dates
recovered from village contexts at Kolomoki post-date the bulk of mound construction at the
site; however, the organization of corporate residential clusters around the central mound group
reflects a shared sense of community articulated through symbolism and ceremony, a feature
commonly associated with aggregate communities (Cohen 1985; Gilman and Stone 2013;
Kowalewski 2006).

The continuing focus on communal ritual provides the context for an interpretation of
household activities that transcends concerns of subsistence. As discussed in the introduction to
this research, quartz is often viewed as a symbolically charged material (Warren and Neighbor
2004; Whitley 1991), especially in Woodland-period North America where it is associated with
Hopewell ritual deposits (Carr and Chase 2005) and Swift Creek sites (Jones et al. 1998; Keith
2010; Pluckhahn 2003; Williams and Harris 1998). The close proximity of Kolomoki to deposits
of Coastal Plain chert raises the possibility that the inclusion of quartz in village lithic
assemblages is not adequately explained purely in terms of the domestic subsistence economy,
but instead reflects the investment of Kolomoki’s inhabitants in the ritual economy associated
with communal ceremony (Spielmann 2002; Wells 2006, 2012; Macannany and Wells 2008).
Lithic flake tools commonly saw use in a variety of mortuary and ritual activities (Miller 2014;
Odell 1994), but the dearth of formal quartz tools like bladelets and minimal evidence for use-wear make characterizing the function of quartz at Kolomoki difficult. Furthermore, I have previously outlined a number of attributes that may have made quartz an attractive technological choice in contrast to chert, though technological preference and symbolic power are not mutually exclusive reasons for the selective use of a material. In addition to quartz, the domestic assemblages at Kolomoki generally contain other materials commonly associated with communal mortuary ceremony in the Woodland period, including elaborate ceramics, some decorated using intricately carved paddles, and mica (Pluckhahn 2003, 2011; Sears 1956). Consideration of the production of these other symbolically charged artifacts may help to contextualize the use of quartz and Kolomoki’s ritual economy in general.

Previous work examining the production of Weeden Island ceramic types at Kolomoki revealed limited evidence for specialization, largely restricted to prestige vessels and those from mound contexts, while production of utilitarian vessels do not seem to have been specialized (Laforge 2012). Pluckhahn and Cordell (2011) also interpret the production of sacred and prestige Weeden Island wares as being specialized at the community level, evident in the wide geographic dispersion of vessels made from clays local to Kolomoki, but again, their interpretation of specialization in the production of utilitarian ceramics is more equivocal. Pluckhahn (2007) has documented a similar divergence in the symmetry of Swift Creek vessel designs from mound and non-mound contexts. Swift Creek pots from domestic contexts at Kolomoki exhibit less symmetry in their designs than those found in or near mounds (Pluckhahn 2007). Recent work by Smith and Knight (2012, 2014) indicates that many Swift Creek paddle designs used a number of reference points to maintain symmetry, which in addition to structuring specific design elements, may have provided useful waypoints during the execution of the design
on the paddle itself. The central technological requirement for Swift Creek paddle production is simply a blade or graver sharp enough to accurately follow a traced design, though the presence of a corpus of design principals suggests that production of symmetrical designs may have required specialized knowledge, if not specialized technology. Conversely, Spielmann (2009) notes that household production of mica cut-outs among Hopewell craft producers would have required little technical skill beyond the artistry inherent in drawing the initial design. Mica content of excavations within the village is presented in Table 5-4. The requirement of sharp and resilient flake tools for cutting mica and engraving paddle designs among other activities may have precipitated the use of quartz to supplement the more generalized chert technology (see Pluckhahn 2003:104).

I performed a linear regression to test the relationship between mica by weight (in grams) and quartz by count from Test Units and excavation blocks. The use of counts for quartz was due to a lack of weight data for quartz from Test Units 1-7. The results of this analysis, presented in Table 5-5, show that quartz and mica are strongly correlated and exhibit a fairly strong positive relationship. The linear regression model is represented by the fit line in Figure 5-1. However, the patterned distribution of residuals presented in Figure 5-2 suggests that an additional variable may be missing from the model which accounts for a significant portion of variation. The addition of Swift Creek ceramics by count, another artifact class strongly correlated with quartz, as an independent variable did not strengthen the regression model and in fact caused the adjusted R-squared value to decrease. However, the classification of proveniences by proximity to village or mound areas of Kolomoki strengthened the model slightly (see Table 5-5), indicating the relationship between quartz and mica also has a spatial component.
Table 5-4: Quartz, mica, and Swift Creek ceramics per square meter of excavation

<table>
<thead>
<tr>
<th>Test Unit</th>
<th>Area (sq. meters)</th>
<th>Quartz</th>
<th>Quartz/sq. meter</th>
<th>Mica</th>
<th>Mica/sq. meter</th>
<th>Swift Creek</th>
<th>Swift Creek/sq. meter</th>
<th>Village/Mound</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>43</td>
<td>10.8</td>
<td>1</td>
<td>0.3</td>
<td>13</td>
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<tr>
<td>2</td>
<td>2</td>
<td>59</td>
<td>29.5</td>
<td>2</td>
<td>1.0</td>
<td>50</td>
<td>25.0</td>
<td>Mound</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>100</td>
<td>50.0</td>
<td>5</td>
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<td>Mound</td>
</tr>
<tr>
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<td>2</td>
<td>2</td>
<td>1.0</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>Mound</td>
</tr>
<tr>
<td>6</td>
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<td>160</td>
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<td>Mound</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>118</td>
<td>59.0</td>
<td>7</td>
<td>3.5</td>
<td>82</td>
<td>41.0</td>
<td>Mound</td>
</tr>
<tr>
<td>8</td>
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<td>4</td>
<td>1.0</td>
<td>0</td>
<td>0.0</td>
<td>7</td>
<td>1.8</td>
<td>Village</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>132</td>
<td>66.0</td>
<td>7</td>
<td>3.5</td>
<td>84</td>
<td>42.0</td>
<td>Village</td>
</tr>
<tr>
<td>10</td>
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<td>289</td>
<td>144.5</td>
<td>7</td>
<td>3.5</td>
<td>265</td>
<td>132.5</td>
<td>Village</td>
</tr>
<tr>
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<td>0</td>
<td>0.0</td>
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<td>12.0</td>
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</tr>
<tr>
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<td>3</td>
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<td>1</td>
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<td>54</td>
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</tr>
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<td>208</td>
<td>104.0</td>
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<td>71.5</td>
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</tr>
<tr>
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<td>0</td>
<td>0.0</td>
<td>15</td>
<td>3.8</td>
<td>Mound</td>
</tr>
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<td>212</td>
<td>106.0</td>
<td>Village</td>
</tr>
<tr>
<td>18</td>
<td>4</td>
<td>105</td>
<td>26.3</td>
<td>7</td>
<td>1.8</td>
<td>154</td>
<td>38.5</td>
<td>Village</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
<td>0.0</td>
<td>9</td>
<td>4.5</td>
<td>Mound</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>31</td>
<td>31.0</td>
<td>1</td>
<td>1.0</td>
<td>13</td>
<td>13.0</td>
<td>Village</td>
</tr>
<tr>
<td>21/23</td>
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<td>76</td>
<td>38.0</td>
<td>1</td>
<td>0.5</td>
<td>59</td>
<td>29.5</td>
<td>Village</td>
</tr>
<tr>
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<td>2</td>
<td>23</td>
<td>11.5</td>
<td>0</td>
<td>0.0</td>
<td>5</td>
<td>2.5</td>
<td>Village</td>
</tr>
<tr>
<td>24</td>
<td>2</td>
<td>5</td>
<td>2.5</td>
<td>0</td>
<td>0.0</td>
<td>4</td>
<td>2.0</td>
<td>Village</td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>97</td>
<td>2.4</td>
<td>1</td>
<td>0.0</td>
<td>137</td>
<td>68.5</td>
<td>Village</td>
</tr>
<tr>
<td>A</td>
<td>29* (40)</td>
<td>5,580</td>
<td>139.5</td>
<td>307</td>
<td>7.7</td>
<td>3,067</td>
<td>76.7</td>
<td>Village</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>1,390</td>
<td>115.8</td>
<td>25</td>
<td>2.1</td>
<td>915</td>
<td>76.3</td>
<td>Village</td>
</tr>
<tr>
<td>D</td>
<td>52</td>
<td>1,192</td>
<td>22.9</td>
<td>14</td>
<td>0.3</td>
<td>892</td>
<td>17.2</td>
<td>Village</td>
</tr>
</tbody>
</table>

Table 5-5: Results of correlation and linear regression for mica and independent variables

<table>
<thead>
<tr>
<th>Ind. Variables</th>
<th>R</th>
<th>R-squared</th>
<th>Adj. R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>.762</td>
<td>.581</td>
<td>.564</td>
</tr>
<tr>
<td>Quartz, Swift Creek</td>
<td>.763</td>
<td>.582</td>
<td>.547</td>
</tr>
<tr>
<td>Quartz, Village/Mound</td>
<td>.776</td>
<td>.602</td>
<td>.569</td>
</tr>
</tbody>
</table>
Figure 5-1: Scatter plot of mica and quartz per sq. meter with fit line representing linear regression model

Figure 5-2: P-P plot of residuals from linear regression of mica and quartz
According to Costin (1991), the small scale of part-time household craft production is such that specialization is not always present, especially for utilitarian items. However, even relatively elaborate ceramics such as red-filmed Weeden Island wares and the bulk of Swift Creek pottery were seemingly intended for utilitarian purposes and are found in domestic context throughout Kolomoki’s village. Furthermore, the large extent of economically differentiated village segments identified here suggests that production of formal chert tools and quartz cores and flakes was organized beyond the household scale. This may reflect a pattern similar to the community specialization argued by Pluckhahn and Cordell (2011) for Weeden Island ceramics, but at the scale of large corporate groups rather than the entire village.

In the case of Kolomoki’s lithic assemblage, specialization needs to be decoupled from its connotations of full-time production and skill represented in the creation of well-made objects. Specialization can privilege quantity of production over quality, in which case skill would be represented by prodigious amounts of reduction debris, such as in Kolomoki’s northeastern village cluster. Costin (1991:16) attributes efficient, routinized production to full-time craft producers; however, the spatial extent of economically differentiated domestic areas I have identified suggests production involved multiple households and included more of the population than a few full-time producers. Hirth (2009) specifically questions the validity of part- and full-time production as useful categories for the characterization of domestic craft production, and suggests archaeologists focus on craft production in the context of the overall domestic economy instead of simply the amount of time spent on craft production itself. Research on domestic craft specialization in Mesoamerica has demonstrated crafting was generally performed as a part-time activity and served as a means of diversifying household economies that could be intensified or scaled down in response to household needs and market
opportunity (Hirth 2009). Of course, Kolomoki’s domestic economies likely differed significantly from those in Mesoamerica based on the lack of evidence for intensive agriculture (Pluckhahn 2003:45); however, Kolomoki’s function as a regional ceremonial center probably brought visitors from distant locations, creating the high proportion of consumers to producers characteristic of Mesoamerican market economies (Hirth 2009:19-20).

While lithic debitage patterning indicates spatially distinct production areas, the presence of most varieties of lithic material in domestic contexts outside specific production zones potentially represents intergroup exchange at Kolomoki. Domestic clusters at Kolomoki may have been economically interdependent. Alternatively, as suggested by Pluckhahn and Cordell (2011) for Weeden Island pottery, lithic production at Kolomoki may have also been geared towards the preparation of formal tools, flake tools, and cores as commodities for exchange outside the community. Sears (1956:27) notes that finished projectile points at Kolomoki are relatively scarce, which when compounded with the high density chert tool production I identified in the northern section of the village, indicates the production of chert tools for consumption elsewhere. Recent research suggests that projectile points become scarcer in contexts of population increase and aggregation as subsistence regimes rely less on large game due to increased pressure on game stocks (Arakawa et al. 2013). With this in mind, the large amount of chert tool production debris at Kolomoki becomes even more conspicuous. The Chattahoochee Valley north of Kolomoki is largely devoid of chert outcrops, though some has been recovered from sites in the area as a supplement to more coarse-grained materials (Price et al. 2008). Quartz and chert are naturally scarce in much of northwestern Florida, but quartz occurs in assemblages from sites in the region, occasionally in association with mica debris (Jones et al. 1998), indicating it may have been used for the production of ritual and mortuary
items outside Kolomoki as well. Kolomoki was ideally placed to facilitate exchange in lithic materials to the north and south along the Chattahoochee and Apalachicola Rivers.

Economic differentiation among domestic clusters at Kolomoki may have also served to maintain social boundaries between these groups as distinct communities of practice. In her analysis of domestic craft specialization in the late prehistoric American Southwest, Mills (2007) notes that diverse domestic economies associated with craft production served as a means for social groups within aggregate villages to maintain and re-create particular identities. Household craft production of both utilitarian and non-utilitarian items is also present at other Woodland period civic-ceremonial centers in the Southeast such as Crystal River (Blankenship 2013; O’neal forthcoming) and among communal longhouses of the American Northwest (Smith 2015). Whether a function of distinguishing class or other forms of social identity, the widespread pattern of economic differentiation and particularly household craft specialization within large prehistoric communities may be a natural outgrowth of the “coalescent society” (Kowalewski 2006) as social groups within these aggregate societies seek to maintain or create unique identities. Within this context, the community of practice serves as the theoretical bridge between economic and social differentiation.

The juxtaposition of economically and socially distinct corporate groups possibly engaged in regional exchange and communal ritual practice recalls the fundamental tension between public expressions of social solidarity and community and private expressions of individual and group status that have characterized recent interpretations of Kolomoki (Pluckhahn 2003, 2007; 2010b). Local and extralocal exchange may have conferred social prestige on commodity producers. Those same producers and ritual practitioners also stood to gain from contributions to, and organization of, large ceremonies, as suggested for other
communities organized around communal ritual (Gilman and Stone 2013; Harrison 1985; Pluckhahn 2003; Schachner 2010; Tuzin 2001). The mobilization of labor towards particular aspects of the ritual and exchange economies by corporate groups afforded multiple paths to social aggrandizement and may have fostered competition even as ceremonies nominally reinforced social cohesion and integration (Pluckhahn 2003, 2007, 2010b), in essence a system of heterarchy (Carballo et al. 2014; Crumley 1979, 1995). Wallis (2011, 2013) places competition between corporate groups at the foreground of his interpretation of exchange in Swift Creek ceramics, which he characterizes as representations of social identities and personae. The exchange and burial of Swift Creek pots containing distinctive designs constituted indices of social interactions and obligations between individuals and groups; however, these exchanges occurred within the context of social and economic alliances and the movement of marriage partners between groups (Wallis 2011, 2013). In light of this, recent syntheses of the Woodland Period Southeast have perhaps incorrectly represented interpretations of communalism and competition as mutually exclusive (Anderson and Sassaman 2012:141-142).

The reinterpreted chronology of Kolomoki’s village occupation begs the question of association between the village and mounds. Many of the earliest features of the burial mounds composing the central axis of the site (Mounds D, and E) were presumably constructed before the village. Previous work at Kolomoki has detailed the chronology of mound construction and their contents (Pluckhahn 2003; Sears 1956). Mound E is interpreted by Pluckhahn (2003:66) as being perhaps one of the earliest constructions at Kolomoki, dated to roughly A.D. 430 to 540. Its central interments were placed in a shaft below the base of the mound, with an arrangement of stones surrounding the burial shaft. The remainder of the mound was subsequently constructed in multiple stages incorporating secondary interments and a cache of pottery vessels placed on the
mound’s eastern side (Pluckhahn 2003; Sears 1956). Mound D, the other main burial mound located near the center of the site, articulates with the central axis bookended by Mounds A and E. The earliest phases of Mound D’s construction consist of a sub-mound midden dating to around A.D. 350-420 (Pluckhahn 2003:64) and log- or rock-lined graves capped by the first mound phase. Subsequent interments show evidence for differing forms of burial treatment, including numerous isolated skulls and other body parts, sometimes paired with grave goods, indicating secondary burial. Mounds D and E contain east-side pottery caches containing elaborate effigy vessels similar to those found at other Weeden Island sites (Milanich et al. 1997). At the eastern end of the site’s central axis sits Mound A; its massive size and the compaction of its clay layers has precluded intensive excavation, exceptions being relatively small units by Palmer (1884) and Sears (1956). Pluckhahn (2003:58) estimates its final construction episode as occurring A.D. 450 to 550 based on the small ceramic assemblage recovered by Sears. Another small mound, Mound K, is interpreted by Pluckhahn (2003, 2007) to articulate with the central axis. Excavated by Charles Fairbanks prior to its destruction, the mound was located east of Mound A along Little Kolomoki Creek and was apparently inundated as it was being excavated. It may have contained submound burials. A small ceramic assemblage has led Pluckhahn (2003:72) to suggest an early date for its construction.

A secondary axis to the south consisting of mounds F, G, and H mirrors the orientation of the central axis. Mound F, bracketing the western end of the southern axis is characterized as a low platform mound containing late Weeden Island ceramics (Pluckhahn 2003:67). Nearby Mound G has never been excavated due to the placement of a historic cemetery on its summit. Pluckhahn (2003:67) suggests that Mound G may date early, within the interval of his Kolomoki I phase (A.D. 350-450) due to its association with the enclosure, but the ceramic assemblage
from Unit 24 and new radiocarbon dates from the southern enclosure instead place Mound G later in the site’s chronology. Capping the eastern end of the southern axis is Mound H, a short, broad mound containing no burials, but a significant number of post-molds beneath the mound and evidence of extensive burning on its summit, perhaps indicating it served as the foundation of a charnel facility (Larson 1952). Radiocarbon dating of a submound feature has placed the construction and use of Mound H at around A.D. 650-690 (Pluckhahn 2003:69), roughly contemporaneous with the abandonment of the Block A house and the occupation of the southern village arc.

The presence of a secondary mound axis in use at the time of the village’s occupation complements the interpretation of social and economic differentiation occurring at Kolomoki during this late interval. Mounds F and H of the secondary mound axis are offset roughly south of Mounds E and D, respectively (Pluckhahn 2003:87), signaling that the builders of the secondary axis intended it to articulate with the main axis in some fashion, perhaps as an elaboration upon existing ritual space or a competing arena for ceremony. Pluckhahn (2003:88) proposes that the southern mounds may have been placed in relation to alignments with the central mounds and celestial events; Mounds F and D are aligned at 63 degrees, approximating the angle of the rising sun on the summer solstice (Pluckhahn 2003:88). Inhabitants of Kolomoki’s later village may have purposefully established the secondary mound axis with explicit relationships to the central axis to appropriate earlier monuments as emblems of the past into their own symbolic expression of attachment to the landscape (Clark 2004; Cobb and Nassaney 2002; Sassaman and Heckenburger 2004; Sassaman 2005). I speculate that rituals conducted on or near the southern mounds, especially possible charnel activity on Mound H
could have been related to the continuing use of Mound D for burial due to the lack of a burial mound on the southern axis.

While the village is organized such that it is essentially bisected by the central mound axis (Pluckhahn 2003:88), the placement of the secondary mound axis in such close proximity to the southern section of the village hints that corporate groups or ritual practitioners in the south may have used the mounds’ construction as a means of exercising greater control over ceremony. Parallels can be made with Moundville, a Mississippian Period mound center in Alabama, which contained a village consisting of spatially discrete habitation areas with corresponding sets of earthworks, interpreted as evidence for competition between lineages and clans (Marcoux and Wilson 2010; Wilson 2008; Wilson et al. 2006, see also Boudreaux 2013). Similarly, Martin (2005) interprets different mortuary layouts in the Lower Illinois Valley Hopewell as representative of conflict between ideologically opposed factions.

The abandonment of the Block A house, occupation of the southern village arc, and construction of Mound H all curiously coincide with a major shift in settlement along the Chattahoochee River towards the south (Pluckhahn 2003:40-46, 212-213). I find a major settlement shift in the region reflected in the residential and ceremonial pattern of Kolomoki unsurprising. As mentioned previously, Pluckhahn (2003:46) posits that Kolomoki marked a social boundary between groups inhabiting opposite ends of the Lower Chattahoochee River. Aspects of mound symbolism, village organization, and distribution of certain aspects of the lithic assemblage reflect a north-south duality, indicating that Kolomoki may have served as a diagram for the social arrangement of the Chattahoochee Valley. Correspondingly, a shift in settlement along the valley would have likely led to a reorganization of the site itself and perhaps
vice-versa if ritual mediation between participating groups became insufficient to resolve tensions.

The above reinterpretation of Kolomoki’s village and the social dynamics acting upon it refines that provided by Pluckhahn (2003, 2010b) by placing greater emphasis on social heterogeneity and a differentiated economy involving production for exchange and ritual. Furthermore, my radiocarbon dates from the southern village have placed the chronology of village formation at Kolomoki over a century later than previously thought. Finally, ceramic assemblages recovered from excavations in the southern village indicate the ceramic chronology of Kolomoki needs to be reconsidered. The early centuries of Kolomoki’s history, characterized by massive monumental constructions, likely centered on creation of fictive kin relationships through the communal veneration of ancestors (Hall 1979, 1997), evident in the position of the shaft tomb under Mound E (Pluckhahn 2003). Shaft burials bear symbolic links to Southeastern Indian beliefs in the origins of the world and the emergence of humans from within the earth (Gibson 2004:261-263; Grantham 2002; Swanton 1927). The placement of these individuals underneath communal mortuary facilities may represent their mythical status as founding members of the community, venerable ancestors, and symbolic “first people” (Hall 1979, 1997).

As Pluckhahn (2003, 2010b) suggests, later phases of Kolomoki, now characterized by the habitation of the large, arc-shaped village, witnessed greater social and economic differentiation, perhaps related to the ritual economy of communal ceremony. Burials in corporate mortuary facilities (Mounds D and E) along the site’s main axis may have continued during this time, though the construction of the secondary mound axis with Mound H as a charnel facility near the southern segments of the village articulates well with my interpretation of increasing social distinction, competition, and elaboration of ritual. Despite this trend towards
increasing social differentiation, economic and status distinctions in the village seem to have been horizontal rather than hierarchical. This is typical of early villages elsewhere (Birch 2012; Crumley 1979, 1995; Flannery 2002; Gilman and Stone 2013; Hayden et al. 1996; Harrison 1985; Schachner 2010; Smith 2015; Tuzin 2001), and likely reflects the continued recognition of a shared identity by the greater community. Apparently this period of habitation along the ovular village plan was relatively short-lived; only a few generations later, the site was occupied by dispersed, relatively autonomous households and mound construction had ceased (Pluckhahn 2011, 2015).
Chapter 6 - Applications and Future Directions

This reassessment of Kolomoki’s social and economic organization and chronology has generated numerous additional questions and has potential applications outside of its contribution to academia.

Applications

The Kolomoki Mounds State Park museum still reflects Sears’s half-century-old interpretation of the site and is in sore need of updating. The conclusions presented here and in forthcoming reports and publications can surely be used to provide a more contemporary interpretation of the site’s chronology and the relationship of the village to the mounds. As a more complete understanding of Kolomoki’s village emerges from this and subsequent research (West forthcoming), efforts will be made to prepare alternative interpretive materials for the state park. Unfortunately, the placement of our recent excavations on private property to the south of the state park has precluded most public outreach activities in the field; however, the state park and the Society for Georgia Archaeology present outlets for dissemination of this research through public lectures and presentations. As part of the Society for Georgia Archaeology’s generous funding for this project, they have also provided a place to publish my findings in their journal Early Georgia, which serves an academic and avocational audience. Finally, we have created a facebook page to further facilitate dissemination of this research and promote public engagement.
Future Directions

This research has provided valuable insight into the nature of Kolomoki’s village, yet certain questions remain for future projects. The first of these is a reassessment of the existing ceramic chronology for Kolomoki. Excavations in the southern village have revealed that Swift Creek pottery still composed the vast majority of decorated ceramics in some domestic contexts after A.D. 700, well into the late phases of occupation defined by Pluckhahn (2003). Furthermore, radiocarbon dates from the southern village where Swift Creek ceramics predominate correspond well with the date produced by Pluckhahn’s (2003:19, 2011:179-180) Test Unit 18, which contained lower proportions of Swift Creek pottery and numerous Weeden Island series ceramics. I speculate that to some degree, differential patterning in Swift Creek and Weeden Island-dominated assemblages may reflect different activities rather than different temporal contexts. More work and more radiocarbon dates will be needed to test this hypothesis.

Additionally, my use-wear study of quartz tools was admittedly lacking in scope. A more systematic approach to use-wear analysis of Kolomoki lithic materials could rectify this and perhaps test my conclusions regarding lithic technological organization.
Chapter 7 - Conclusion

The research presented above fundamentally alters the interpretation of Kolomoki and opens intriguing new lines of inquiry by identifying patterns of economic and social differentiation and placing its village aggregation later in time than previously thought. My analysis of the organization of lithic production at Kolomoki revealed evidence of economic diversification in the form of craft production throughout the village. Discussion of economic and social differences within Kolomoki’s village from the perspective of communities of practice helps to integrate these two phenomena and places the household, the primary arena for situated learning, at the center of identity formation and maintenance. Recognizing this link between diversity in the domestic economies and social identities of Kolomoki’s residents situates this important civic-ceremonial center within the broader context of coalescent societies (Kowalewski 2006), allowing for Kolomoki’s inclusion in broader comparative research on the topic.

The evidence for domestic craft production and exchange at Kolomoki also carries implications for political organization. The identification of multiple economically and socially differentiated domestic clusters indicates that lineages or perhaps some other form of extra-household organization also factored in the organization of labor. Presumably, the influence of lineages, clans, or some other social formation above the level of the household also extended to the practice of communal ritual, given that the organization of domestic craft production also seems to have extended to the production of mortuary items such as mica. In sum, the evidence
provided here paints Kolomoki as much more socially, politically, and economically diverse than previous interpretations have recognized.

Finally, my reassessment of Kolomoki’s chronology is significant. While Sears (1956) originally argued for the site’s Mississippian Period occupation and Pluckhahn (2003) placed the village habitation in the late Middle Woodland Period, this project has shown that the bulk of settlement at Kolomoki occurred in the Late Woodland Period. The Late Woodland Period in the American Southeast is generally considered to be a time of transition between the pinnacle of Woodland Period interaction and exchange exemplified by Hopewell expressions of the Ohio and Mississippi Valleys and the fluorescence and spread of Mississippian cultural traits including the corpus of iconography known as the Southeastern Ceremonial Complex (Anderson and Sassaman 2012; Pluckhahn 2011). The occupation of a Late Woodland village of Kolomoki’s size problematizes generalizations of the Late Woodland as a mere interval of transition between periods of high cultural achievement and complexity.

Together, my findings and interpretation should be cause for a reconsideration of the egalitarian social organization ascribed Woodland period societies. Political integration through communal ritual does not necessarily require or indicate equality, and in fact the potential for differential engagement with the economics and performance of communal ceremonies probably points the opposite direction, a point which Pluckhahn (2003:204) acknowledged in his interpretation of Kolomoki. This “fundamental tension” between communalism reinforced through ritual practice and the desire for households, lineages, and other segments of Kolomoki’s society to gain power, prestige, and influence was a central theme throughout his work (Pluckhahn 2003, 2010b). Ultimately, however, I argue that competition and the desire for social
and economic distinction by segments of Kolomoki’s inhabitants was less subversive, and instead an open fact of village life at Kolomoki.
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